

CHAPTER - 3

LIBRARY CLASSIFICATION SCHEMES: AN OVERVIEW

3.1 Introduction

The term 'Classification' is a derivation from the Latin word "Classis" which connotes 'Grouping'.¹ Classification is a procedure of grouping similar items and objects and is essential in formulating groups that is known as classifying which results in Classification. This process helps the user to arrange, organize and make a logical sense of articles which also assists the user to locate them in an easy manner. Classification is the ability to distinguish objects through their similarities and dissimilarities which is distinct in their identities for human beings.

A major objective of libraries is to ensure that optimum use is made of their collections by leading each user as directly as possible to the material he or she requires. As an aide to the achievement towards this objective almost all libraries find it helpful and it is necessary to impose upon their books and other material one or more forms of subject control. One such form of subject control is known as classification. The classification of library involves placing together in classes the objects which contain characteristics in common and to separate from them the objects that do not have same characteristics. Classification also forms the basis of an order in handling literature and its records. It reveals the strengths and weaknesses of library collections and it is therefore essential for a systematic, comprehensive and representative book selection, through revision and withdrawal of unwanted stock. It also analyses the contents of books for readers through the medium of catalogue and is extremely helpful in the compilation of Bibliographies. It facilitates book display and can also be used for recording books issued out to the readers and when returned by them which allow an easy return of books to the shelves and in their right places.²

Library Classification is related with the arrangement of documents in the library in a manner that the readers are served in the best possible way. Therefore, it requires a detailed scheme of classification in which knowledge is divided into a broader perspective, which is again subdivided into subjects or main classes. Each subject and its divisions along with their specific aspects are represented by a system of numbers called Notation. It is the notation that helps in the arrangement of documents on the shelf. Library classification deals with the organizing of library materials, belongs to a systematic group.

Library Classification can also be considered to be a process of putting books and other reading material on a subject in a logical sequence on the shelf, which could be of immense help to the users. It requires an adept thorough study and practice in the technique of classification of books, knowledge of the details and handling of the scheme of classification. A close familiarity with the broad spectrum of learning, its growth and the interrelationship of various components is also necessary. A good selection of books is the basis towards a good library collection and proper classification is fundamental in organizing collection and in the retrieval of specific books for use by the users. Classification is one of the most important steps in the organization of the libraries and has been aptly called the “Foundation of Librarianship.”³

According to Berwick Sayers,⁴ library classification is “the arrangement of books on shelves or descriptions of them, in the manner which is most useful to those who read.” Similarly, Dr. S R Ranganathan,⁵ library classification is meant to be “the translation of the name of the subject of a book into a preferred artificial language of ordinal numbers, and the individualization of the several books dealing with the same specific subject by means of further set of ordinal numbers which represent some features of the book other than their thought content.”

Librarianship consists of the selection, acquisition, organization and dissemination of knowledge presented in the form of books, periodicals, film, photographs, maps, gramophone records, audio and video tapes, Compact Discs, DVDs, Microfiche and Microforms. Knowledge must be organized in a library in an appropriate manner with the objective of dissemination. Classification is a technique of organizing knowledge in a library as larger the number of unorganized books; it is all the more difficult to locate a particular book. Since books are the most common source of knowledge, the term 'Bibliographic Classification' is often used as a synonym for 'Library Classification'.⁶

3.2 Purpose of Library Classification⁷

The following are the main purposes of library classification:

1. **Helpful Sequence** - Classification helps in organizing the documents in a method most convenient to the users and to the library staff. The documents should be systematically arranged in classes based on the mutual relationship between them which would bring together all closely related classes. The basic idea is to bring the like classes together and separate these from unlike classes. The arrangement should be such that the user should be able to retrieve the required document as a result it will make a helpful sequence.
2. **Correct Replacement** - Documents whenever taken out from shelf should be replaced in their proper places. It is essential that library classification should enable the correct replacement of documents after they have been returned from use. This would require a mechanized arrangement so that arrangement remains permanent.
3. **Mechanized Arrangement** - It means to adopt a particular arrangement suitable for the library so that the arrangement remains permanent. The sequence should be determined once for all, so that one does not have to pre-determine the sequence of documents once again when these are returned after being borrowed.
4. **Addition of New Document** - Library would acquire new documents from time to time therefore library classification should help in finding the most helpful place for

each of those among the existing collection of the library. There are two possibilities in this regard. The new books may be on a subject already provided for in the scheme of library classification, or it may be on a newly emerging subject that may not have been provided in the existing scheme.

5. **Withdrawal of Document from Stock** - In this case, the need arises to withdraw a document from the library collection for some reason, and then library classification should facilitate such a withdrawal.
6. **Book Display** - Display is adopted for a special exhibition of books and other materials on a given topic. The term is used to indicate that the collection in an open access library is well presented and guided. Library classification should be helpful in the organization of book displays.
7. **Other Purposes** –
 1. Compilation of bibliographies catalogues and union catalogues
 2. Classification of information.
 3. Classification of reference queries.
 4. Classification of suggestions received from the users.
 5. Filing of non book materials such as photographs, films, etc.

3.3 Components of Library Classification⁸

Library Classification is a process of translating the specific subject of a book into an artificial language of ordinal numbers, which in classificatory language are helpful in arriving at a logical arrangement. The essential components of a scheme of library classification are:

1. **Notation** – It is a set of symbols which stands for a class or a subject e.g. philosophy and literature and its sub-division example ethics, English literature representing a scheme of classification. For the purpose of arranging books, use of names of the subjects, broad or specific in natural language would neither be practicable nor convenient so these are translated into artificial language of ordinal numbers. A Notation is of two types, pure or mixed. Only one species of symbols are used in

pure notation, either numerals such as 1 to 9 or from letters A to Z. In a mixed notation more than one set of symbols are used. Pure notation is easy to understand but mixed notation is easier to remember and increases the capacity of the scheme of library classification.

2. Form Division – Knowledge may be presented in one form or the other, the form could be text book, manual, history, dictionary and encyclopedia. These forms or styles of presenting knowledge of a subject could be commonly applied to any subject. Book classification takes care of representing form in the Call Number (A number by which a book is called for particularly a closed access library). The numbers representing the forms of books are called form divisions. They are also known as common sub-divisions or common-isolates.
3. Generalia Class – There are certain books such as encyclopedias, bibliographies and collected writings of an author which cannot be classified under any specific subject since they cover all subjects under the sun and hence are classified under the Generalia Class.
4. Index – Index is an essential component of a scheme of Library Classification which is provided at the end of the scheme. It is of immense value to the members in their handling of a classified part of the catalogue.
5. Call Number – In classifying, each book is provided with a distinguished number specified to it which can be used for calling the book from the stacks and replacing it on its return to its right place. It is known as a Call Number. This Call Number fixes the position of a book or any document in a sequence and helps to locate it through its entry in the catalogue. Each document has its own individual call number which comprises of class numbers which represents the thought content of the book and the book number which represents one or more of the following: Author No., Year of Publication, Accession No. or any other such appropriate feature.

3.4 Rationale of Library Classification⁹

The main objective of library classification is to arrange the library documents in a filiation sequence for the convenience of both the readers and the staff in the library. In fact, According to Dr. S.R. Ranganathan, library classification mechanizes the correct replacement of library documents after use, fixes the most helpful place for a newly added document or a book amongst the other books available in the library on a similar subject and files the most helpful place for the first document on such other already existing subjects which are related to it. For this purpose, the class number must be coextensive with the subject of a document and easy subject must be individualized to the extent that no other subject must share the same class number.

1. It brings like books together – Classification arranges books in an order most convenient to the readers and the librarians. Readers should find all the related books together and librarians should minimum time and energy in locating the documents. Classification brings together all the books on the same subject. Not only that, books on different branches of the subjects are also collated in a way that their mutual relationship is clearly displayed.
2. It saves time – Classification is a great time saving device for readers, as well as librarians and thus fulfils the demand of the fourth law of library science. The arrangement by subject, a natural consequence of library classification, saves a lot of time of readers as well as of staff, by bringing together all the related documents.
3. It reveals the weakness and strength of the collection – As classification arranges books on shelf by subject, it clearly shows which subjects have a good collection, and which subjects require more attention. In this way, it facilitates the book selection process and helps in developing all round collection of the library. Similarly, it assists the librarians in making up their collection, for the departmental or branch libraries or lending centers, from the central stock.
4. It helps in bibliographic research – Classification is of value in bibliographic research as it helps in the compilation of bibliographies, catalogues and union catalogues.

5. It helps in stock verification – Classification plays a significant role in the stock taking procedure. Generally, verification of stock is done through a shelf list, which is arranged in classified order. Books on the shelf are also arranged in the same order. In the stock taking procedure, a person on the shelf goes on calling the call number of the books while the other person, holding the shelf list goes on pushing the relevant cards forward. Thus, the process of stock taking is completed within a relatively short time.

Library classification assists the librarian to make available the requisite book to the reader in the shortest possible time. The purpose of any library classification scheme is to allow libraries to arrange the documents in a sequence that will be of immense help to the readers. The library classification scheme offers the leaders a basis for organizing books and other reading material so that these can be used by the readers as and when they desire. A variety of classification schemes have been developed in various countries throughout the world to maintain the library collections in the most helpful manner possible.

3.5 Library Classification Schemes

According to the Dictionary of Library and Information Science¹⁰, Classification schemes is defined as “a list of classes arranged according to a set of pre-defined principles for the purpose of organizing items in a collection or entries in an index, bibliography or catalog into groups based on their similarities and differences to facilitate access and retrieval.

Library classification schemes are tools that allow us to allocate a class mark – an artificial notation comprising alphanumeric characters and punctuation marks to every item based on its subject content so that the library staff can preserve all the related items together on the library’s shelves. They are the logical arrangements of subjects plus a system of symbols representing those subjects. Classification schemes aid a classifier to

represent the subject content of every document by appropriate notations. A library classification scheme has a number of objectives:

1. To provide a shelf address – to assign a specific location for every document on the library's shelves.
2. To collate items – placing documents on the same or similar subjects together on the library's shelves to facilitate users to find items on the same subject in one place within the library.
3. To link items – to enable users looking for items through a library catalogue can use call numbers as references to locate items on the shelves; classification is used as a link between the catalogue record of an item and the item itself on the shelf.
4. To enable browsing facilities – using the structure of a bibliographic classification to browse a collection on the library's shelves or in an electronic or in an electronic collection.

3.6 Features of Classification Scheme¹¹

Classification schemes need to include the following features to prove to be of maximum benefit to the classifier:

1. Schedules – The term Schedule is used to describe the printed list of all the main classes, divisions and sub-divisions of the classification scheme. They provide a logical arrangement of all the subjects encompassed by the classification scheme. This arrangement usually being hierarchical shows the relationship of specific subjects to their parent subject. The relevant classification symbol is shown against each subject.
2. Index – The Index to the classification scheme is an alphabetical list of all the subjects encompassed by the scheme, with the relevant class mark shown against each subject. There are two types of index:
 - A Relative Index – includes broad topics in its alphabetic arrangement, but indented below the broad subject heading is a list of all the aspects of the

subject. For e.g. Dewey Decimal Classification Scheme has an excellent relative index.

- A Specific Index – lists specific subjects in a précis alphabetical sequence. It does not indent lists of related topics under the broad subject headings. For example, Brown’s Subject Classification Scheme has a specific index.
3. Notation – Notation is the system of symbols used to represent the terms encompassed by the classification scheme. The notation can be pure –using one type of symbol only – or mixed –using more than one kind of symbol. A pure notation would normally involve only letters of the alphabet or only numerals. A mixed notation would normally utilize both letters and numerals. Some notations also involve the use of grammatical signs or mathematical symbols. The notation usually appears on the spines of library books to facilitate shelving and to ensure that each book is in its correct place. The notation is also shown on catalogue entries to help the staff and public to remove books quickly. It therefore serves as:
 - A link between the index and the schedules of a classification scheme, and
 - A link between the library catalogues and the shelves.
 4. Tables – The tables of a classification scheme are additional to the schedules and provide lists of symbols which can be added to class marks to them more specific and precise.
 5. Form Class – A form class makes provision for those books where form is of greater importance than subject. Most books of this kind are literary works – fiction, poetry, plays etc.
 6. A Generalities Class – This class caters primarily for books of General knowledge which could not be allocated to any particular subject class due to their pervasive subject coverage. In some respects, a generalities class is also a form class since general bibliographies, general encyclopedias and general periodicals would be encompassed in it.

3.7 Types of Classification Schemes^{12, 13}

On one extreme, a classification scheme can be completely enumerative where every subject and class ID listed with a pre-defined notation and the classifier has simply to choose a class and the corresponding notation. On the other hand, a classification scheme can be fully faceted, where the classifier has to follow a set of rules to construct a class number. In between these two extremes there is also a classification scheme that to some extent is enumerative but also makes provision for some sort of synthesis to build the class number. These are called analytico-synthetic classification schemes.

3.7.1 Enumerative Classification Schemes

An enumerative classification scheme is a scheme where all the possible classes are enumerated according to certain characteristics. There is a top down approach whereby a series of subordinate classes are produced and where both simple and complex subjects are listed. The advantage of this scheme is that the structure of the scheme is shown by the notation as far as practicable. Users can easily find the coordinate and subordinate classes and can make a map of the subject. The disadvantage is that it is difficult to accommodate new subjects and frequent revisions may be required. An enumerative classification scheme, in some cases, displays hierarchical structures of notation. The basic tenet of this scheme is that all the possible subjects and topics are listed along with a predefined class number, and therefore the classifier does not have to create any class number such as Dewey Decimal Classification.

3.7.2 Analytico-Synthetic Classification Scheme

Analytico-Synthetic classification schemes resolve some of the problems of enumerative classification schemes. The concept behind this scheme is that the subject of a given document will be divided into its constituent elements and then the classification scheme will be used to find notations for each element, which will then be combined according to the prescribed rules to prepare the final class number. This scheme overcomes the two major problems of enumerative classification schemes as, by providing various tables,

specific notational symbols and rules, they avoid the necessity for a long list of classes, and thus produce a smaller classification scheme in size; they also provide flexibility to users as specific numbers can be built and the classifier is not restricted by the availability of a specific subject. Nevertheless, it makes classifiers job complex since they have to construct the class numbers as opposed to just selecting one from a list like Universal Decimal Classification.

3.7.3 Faceted Classification Scheme

A faceted classification scheme is on the other extreme of the scale since instead of listing of all the classes and the corresponding numbers, it lists the various facets of every subject or main class and provides a set of rules for constructing class numbers through facet analysis. The concept of facet analysis was proposed by Dr. S.R. Ranganathan and was used in his faceted classification scheme called Colon Classification. The basic idea was that any component or facet of a subject can fit into five fundamental categories: Personality, Matter, Energy, Space and Time which became the major focus of classification research from 1930 onwards resulting into the Colon Classification

3.8 Dewey Decimal Classification (DDC)

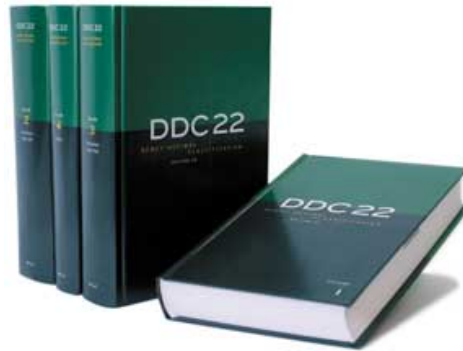


Fig. 3.1: Dewey Decimal Classification

Dewey Decimal Classification (DDC) is the most popular of all the modern library classification schemes. It was devised by Melville Dewey in 1876. It provides a systematic arrangement of all the materials mechanized by notation of great simplicity and apparent flexibility. With the emergence of DDC, the principle of relative location of books on shelf according to the subject became perfectly feasible and it replaced the then existing practice of a fixed location, when a certain number of shelves were allotted to each subject and each book was identified by the shelf number and its position on the shelf. As a matter of fact, all our decimal fraction notation, but for the convenience of remembering the number, the decimal point is inserted after the third digit. Sub-divisions are carried out decimally and all numbers are read as decimals. At each stage, there are nine coordinate divisions whenever there are more than nine divisions of equal status, the eight are named and the remaining are covered in the nine division i.e. 'others'. The use of simple and pure notation that is Indian numbers, provision of form division and relative index has made DDC very popular.¹⁴

Melvil Dewey (1851-1931)

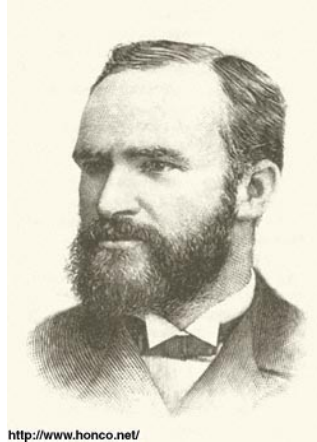


Fig. 3.2: Father of Dewey Decimal Classification

Table 3.1: Different Editions of DDC¹⁵

Edition	Year of Publication	Total Pages	Editors
1	1876	44	Melvil Dewey
2	1885	314	Melvil Dewey & W.S. Biscoe
3	1888	416	Melvil Dewey & W.S. Biscoe
4	1891	466	E. May Seymour
5	1894	467	E. May Seymour
6	1899	511	E. May Seymour
7	1911	792	E. May Seymour
8	1913	850	E. May Seymour
9	1915	856	E. May Seymour
10	1919	940	E. May Seymour
11	1922	988	J. Dorkas Fellows
12	1927	1243	J. Dorkas Fellows
13	1932	1647	J. Dorkas Fellows & M.W. Getchell
14	1942	1927	Constantin Mazney & M. W. Getchell
15	1951	716	Milton J. Fergusom
15 (Revised)	1952	927	Godfrey Dewey
16	1958	2439	Benjamin A. Custer & D. Haykin
17	1965	2153	Benjamin A. Custer & D. Haykin
18	1971	2718	Benjamin A. Custer
19	1979	3385	Benjamin A. Custer
20	1989	3388	Benjamin A. Custer
21	1996	4115	J.P. Comaromi
22	2003	4076	J. Mitchell
23	2011		J. Mitchell

3.8.1 Features of the Dewey Decimal Classification¹⁶

Decimal Classification is an almost enumerative scheme of classification. Since 1876 to 2011 (23rd edition) this scheme did not look back, and its popularity has grown day by day throughout the world. This statement can be justified by the fact that DC has been translated into many languages, such as Chinese, Spanish, Danish, Turkish, Japanese, Hindi, Portuguese, Sinhalese and several other languages across the globe. Dewey introduced the notion of using notation for the subjects in his scheme and applying the notation to the book and not to the shelves. But certain features forming the basis of its present form can be still recognized as follows:

1. **Universal Scheme** – A distinctive feature of the DC is that its classes reflect all the areas of specialized knowledge developed in modern society. These specialized areas are loosely put together in the main classes in the scheme, albeit in this manner the principle of collation of bringing of related subjects in close proximity is sometimes violated.
2. **Relative Location** – In his scheme, Melvil Dewey introduced the brainwave of ‘relative location’ as opposed to ‘fixed location.’ For this purpose, he utilized the decimal notation consisting of Arabic numerals for the subjects and assigning that notation to the books on the basis of thought content and not on the basis of the shelves. In this method, a new book on a given subject may be put in between the existing sequence at the required position, directed by the notation assigned to that book and there is no necessity to put the book at the end of the sequence as had been the practice in “fixed location.”
3. **Decimal Notation** – Melvil Dewey used decimal fraction notation for the arrangement of knowledge on the shelves. Indo-Arabic numerals (0 to 9) are used decimally for the sub-divisions of knowledge. In this process, the universe of subjects is divided into ten main classes, each of which is again divided into ten divisions. Again each division is further divided into ten sections. At each stage of division, a given number is sub-divided decimally. All the class numbers in DC are decimal fractions.

4. Minute Division – The first edition of DC consisted of only 42 pages and at that time, it was criticized for its being too broad in its sub-division. The number of pages had since been increasing as shown in Table 1. This growth suggests the enormous number of sub-divisions which are possible and useful for minute classification. Dewey emphasized the need of minute division as “the advantage of close classing is unquestioned if the user knows just what it is.”
5. Mnemonics – Another important feature of DC is mnemonics, which means ‘aid to memory.’ In DC, mnemonics are available for subject synthesis. The use of consistent order in the subject division of different classes produces mnemonics. There are various tables, such as, Area Table, Language Table, Standard Division Table, etc. which are used to achieve subject synthesis. The user may also find Scheduled Mnemonics, Systematic Mnemonics and Alphabetical Mnemonics at a few places in DC.
6. Integrity of Numbers – One of the most important features of DC is the integrity of numbers. To incorporate new developments and to keep pace with the growth of knowledge, a scheme of classification should be revised continually, without changing the basic structure, so that the professionals may accept the revised edition without hesitation.
7. Auxiliary Tables – Auxiliary tables provide an important basis for preparing numbers and lead to uniform meanings of numbers when used in various contexts. A document, which is a source of knowledge, always has some physical form. Melvil Dewey in the second edition of the scheme published in 1885 introduced the concept of “Form Divisions” to be used for the sub-divisions of a subject based on the characteristics of documents, either in accordance with the point of view of the author, i.e. Bibliographical, Philosophical, Theoretical, Historical or in accordance with the form of thought content in documents, i.e. Digest, Manual, Monograph, Dictionary, Periodical or Manual. The “form divisions,” could be attached to any class number according to the instructions provided therein. The system of ‘form divisions’ remained in use up to the 12th edition. The 13th edition consisted of 5

“Auxiliary Schedules.” The 14th edition had 4 tables. In the 15th edition, the conventional 9 form divisions, i.e. 01-09 were annexed along with the tables, without any detailed sub-divisions. The word ‘Form divisions’ was replaced by “Standard Subdivisions’ in the 17th edition, along with new area table in volume 2 (Index). The 18th, 19th and 20th editions consist of 7 auxiliary tables which are detailed under DDC 20.

3.8.2 Structure of Dewey Decimal Classification¹⁷

1. Schedule - A basic premise of DDC is that it is arranged by discipline and not by subject. At the broadest level, the DDC is divided into ten main classes, which together cover the entire world of knowledge. Each main class is further divided into ten divisions, and each division into ten sections (not all the numbers for the divisions and sections have been used). The three summaries of the DDC are as given:
2. Summaries – Summaries provide an overview of the intellectual and notational structure of classes. Three types of summaries appear in the schedules and tables of DDC. The summaries of the schedules as a whole are found at the front of the schedules (Volume 2-3). Single level summaries in the schedules and tables provide an overview of classes that have sub-divisions extending over more than two pages. Multi-level summaries are provided for eight major divisions and the Area Tables for Europe and North America.

The First Summary: Contains the ten main classes. The first digit in each three-digit number represents the main class.

Table 3.2: First Summary of DDC

000	Computers, information & general reference
100	Religion
200	Philosophy & psychology
300	Social sciences
400	Language
500	Science
600	Technology
700	Arts & recreation
800	Literature
900	History & geography

The Second Summary: Contains the hundred divisions. The second digit in each three-digit number indicates the division.

Table 3.3: Second Summary of DDC

000	GENERAL WORKS	100	PHILOSOPHY
010	Bibliographies	110	Metaphysics
020	Library & Information Science	120	Epistemology
030	Encyclopedias & Books of Facts	130	Astrology, Parapsychology & The Occult
040	[Unassigned]	140	Philosophical Schools of Thought
050	Magazines, Journals & Serials	150	Psychology & Substance Abuse
060	Associations, Organizations & Museums	160	Logic
070	Journalism, Publishing & News Media	170	Ethics
080	Quotations	180	Ancient, Medieval & Eastern Philosophy
090	Manuscripts & Rare Books	190	Modern Western Philosophy
200	RELIGION	300	SOCIAL SCIENCES
210	Philosophy & Theory of Religion	310	Statistics
220	The Bible	320	Political Science & International Law
230	Christianity & Christian Theology	330	Economics
240	Christian Practice & Observance	340	Law
250	Christian Pastoral Practice & Religious Order	350	Public Administration & Military Science
260	Church Organization, Social Work & Worship	360	Social Problems & Social Services

270	History of Christianity	370	Education
280	Christian Denominations	380	Commerce, Communications & Transportation
290	Other Religions	390	Customs, Etiquette & Folklore
400	LANGUAGE	500	SCIENCE
410	Linguistics	510	Mathematics & Computer Technology
420	English & Old English Languages	520	Astronomy
430	German & Related Languages	530	Physics
440	French & Related Languages	540	Chemistry
450	Italian, Romanian & Related Languages	550	Earth Sciences & Geology
460	Spanish & Portuguese Languages	560	Fossils & Prehistoric Life
470	Latin & Italic Languages	570	Biology & Life Sciences
480	Classical & Modern Greek Languages	580	Plants (Botany)
490	Other Languages	590	Animals (Zoology)
600	TECHNOLOGY	700	FINE ARTS & RECREATION
610	Medicine	710	Landscaping & area planning
620	Engineering	720	Architecture
630	Agriculture	730	Sculpture, ceramics & metalwork
640	Home management & hospitality industry	740	Drawing & decorative arts
650	Management, public relations & printing	750	Painting
660	Chemical engineering	760	Graphic arts
670	Manufacturing	770	Photography
680	Manufacturing specific products	780	Music
690	Building & construction	790	Sports, games & entertainment
800	LITERATURE & CRITICISM	900	HISTORY
810	American Literature in English	910	Geography & Travel
820	English & Old English Literatures	920	Biography & Genealogy
830	German & Related Literatures	930	History of the Ancient World (to 499 A.D.)
840	French & Related Literatures	940	History of Europe (ca.500 A.D. -)
850	Italian, Romanian & Related Literatures	950	History of Asia
860	Spanish & Portuguese Literatures	960	History of Africa
870	Latin & Italic Literatures	970	History of North America
880	Classical & Modern Greek Literatures	980	History of South America
890	Other Literatures	990	History of Other

The Third Summary: contains thousand sections. The third digit in each three-digit number indicates the section. Thus 530 is used for general works on physics, 531 for

classical mechanics, 532 for fluid mechanics, 533 for gas mechanics. Arabic numerals are used to represent each class in the DDC. A decimal point follows the third digit in a class number, after which division by ten continues to the specific degree of classification needed.

3.8.3 Relative Index

Relative index is appended to the schedules of a book classification. It is the most important feature of this scheme; arranged in an alphabetical order and aims to include all topics expressed or implied in the main tables together with every likely synonym. The index is comprehensive one but exhaustive. The topics which are further sub-divided in the table are entered in the bold face type. The specific items in the sub-divisions are entered directly under their own name. The index is relative in the sense that each phase of the subject is noted. If a topic is treated in two or more classes, the number it takes in each group is taken. The use of the index is not limited to locating topic in the tables, it has equal value in locating topic on the shelves and in fact the reader's key to the shelf arrangement in every library in which the DDC is being used.

3.8.4 Book Numbers in DDC

The DDC number by itself is not sufficient to identify a work from others in the same category. The book number is a notation used to create a shelf location for each work in the library. This unique number is the call number, which contains a classification number and an author notation, which also might be called a book number or cutter number. It is quite possible that several books in a library would be classified under the same DDC number hence, it is necessary to use the author number to create this unique call number. The initial letter in the book number is usually the first letter of the author's surname or the first letter of the main entry.¹⁸

3.8.4.1 Book Number Schemes

The two most frequently used schemes for assigning books numbers are generally used with the classification with which they are closely associated.

1. Cutter Tables - The most popular book number scheme used with the DDC was devised by Charles Ammi Cutter. The notations are called cutter numbers and assigning them is referred to as “cutting” or “to cutter”. The most frequently used version of cutter scheme is the Cutter-Sanborn Three Figure Author Table, by Kate E. Sanborn, where the cutter scheme is altered to have three figures. The cutter table consists of three or more initial letters from a surname or a surname and a three-digit number. Letters E, I, J, K, O, U, Y and Z are followed by two-digit numbers. The cutter number includes the initial letter of the author’s name and then the corresponding number.
2. Library of Congress Author Numbers - The author notations used with the Library of Congress classification can also be used with the DDC. The author number consists of the initial letter of the author’s name or main entry followed by a number derived according to the directions given in the tables that follow. The numbers are used decimally.

3.8.5 DDC 23rd Edition¹⁹

DDC 23, the four-volume unabridged edition of the Dewey Decimal Classification (DDC) system, reflects the many changes to the body of human knowledge that have occurred since DDC 22 was published in 2003. Published in mid-2011, DDC 23 includes helpful tools that make the classification easier to use, including an introduction, a glossary and a list of new features. Each of these tools will help to better understand how the DDC organizes knowledge into a classification that is useful to library users worldwide. The DDC 23 Introduction is a full reprint from volume 1 of DDC 23, provides a detailed overview of the DDC, including basic terminology and an explanation of DDC structure, complete with many helpful examples. The various features of DDC 23rd Editions are:

1. New provisions in 004–006 Computer science and elsewhere to reflect changes in technology;
2. Updates to provisions for the Orthodox Church and Islam in 200 Religion;
3. Improved provisions in 340 Law for legal systems based on civil law;
4. Updated provisions for food and clothing;
5. Updates to 740 Graphic arts and decorative arts;
6. A new location and expanded development for cinematography and videography at 777;
7. Significant expansions throughout 796 Athletic and outdoor sports and games;
8. Significant expansions in Table 2, with parallel provisions in 930–990, for the ancient world, Italy, Switzerland, Sweden, Finland, Turkey, Indonesia, Vietnam and Canada;
9. Updated historical periods throughout 930–990.

3.8.6 Web Dewey²⁰

Users of DDC who started with the print version and later moved on to the Electronic version had long been requesting for more frequent institutional update of the Dewey database, hypertext linking and many other enhancements that are most effectively delivered in a browser-based setting. Apart from this, there is a very strong general trend from CDS to the Web today. Hence, Web-based access to an enhanced version of the DDC database is available through what is known as Web Dewey. The key features of Web Dewey include:

1. An easy to use, browser based interface that allows you to search the DDC (and related terminology) efficiently and navigate intuitively.
2. Thousands of Relative Index terms and built numbers not available in the print DDC.
3. Library of Congress Subject Headings (LCSH) that have been intellectually mapped to Dewey headings by DDC editors.

4. Selected LCSH mappings from the new OCLC Forest Press publication, *People, Places & Things*.
5. LCSH that have been statistically mapped to Dewey numbers from records in the World Cat (the OCLC Online Union Catalog).
6. Links from mapped LCSH to the LCSH authority records.
7. Quarterly updates, incorporating the latest changes to the Classification and new LCSH mappings, index terms and built numbers.
8. An annotation capability, which allows you to add your own notes into Web Dewey to reflect local classification practices.

The Web Dewey database includes the most current version of the DDC (DDC 22 and all updates since its publication in 2003), plus supplemental data. It is updated quarterly and mainly contains records for Dewey entry numbers from the schedules and tables, records for entries in the DDC manual, the DDC Relative Index and Library of Congress Subject Headings (LCSH) associated with Dewey class numbers.

The Web Dewey is available through the Dewey Services option of the OCLC connection service. There are two basic options: the user can search or browse for a subject or class number or can simply move to the Dewey schedule or tables, from the search or the browse screen, and follow the hierarchy of the classes.¹¹

3.8.7 Revision of the Scheme

The main method of revision has been the result of publication of new editions. Revisions usually take the following forms: Expansion, Relocation, and Reduction and Phoenix schedules. The last form is the most far-reaching form of revision. However, "DC & Decimal Classification: additions, notes and decision" is a beneficial means by which modifications can be announced in advance of a forthcoming latest edition.

3.9 Universal Decimal Classification (UDC)

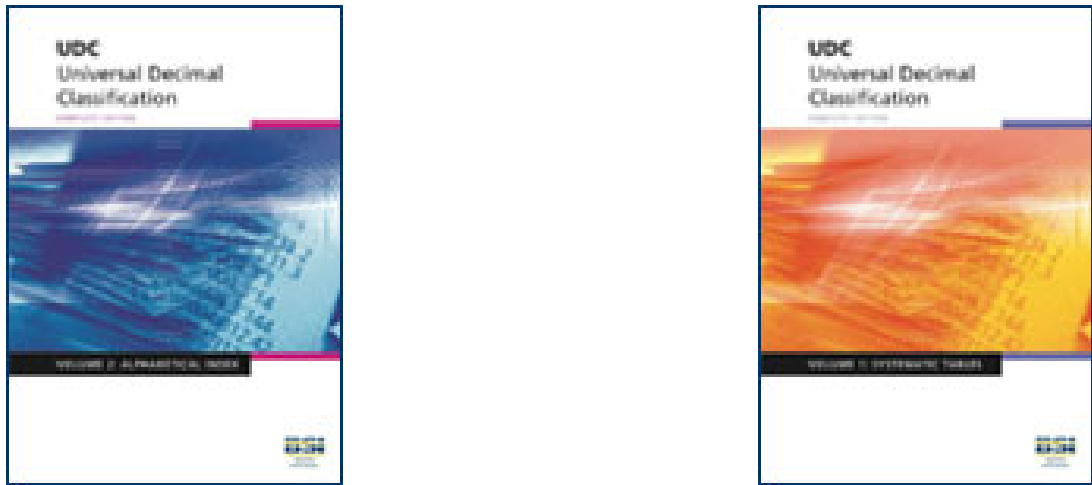


Fig. 3.3: Universal Decimal Classification

The Universal Decimal Classification (UDC) scheme of classification was developed in the year 1895 by the Belgium Barrister Paul Otlet and Nobel Prize winner Henri La Fontaine. The UDC is peculiar in the sense that it consists of a combination of both enumerative and faceted character of the schemes and hence it is designated as an Almost-Faceted Scheme of Classification. The UDC is derived from DDC as universal since it encompasses the whole field of knowledge. It is the multi-lingual general classification tool for organizing all kinds of recorded knowledge in the library. It is an international classification system mainly developed for the purpose of indexing and arranging an enormous card bibliography which not only includes books but also all kinds of documents, periodical articles, patents, trade catalogues, abstracts and other micro documents in more than 28 different international languages.

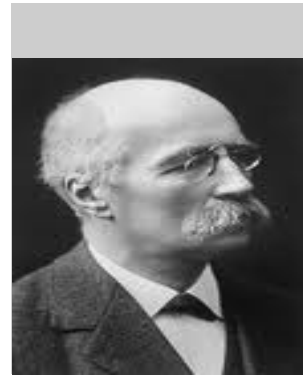
The International Institute of Bibliography (IIB) was organized under the aegis of an International Conference on Bibliography held in Brussels in 1895. One of the main objectives was to devise a scheme of classification for its use in indexing world literature. The existing schemes of classification were found inadequate for the purpose therefore; it is an international extension and adaptation of the DDC, initially by two Belgians, Paul

Otlet and Henry La Fontaine. The first edition appeared in French in 1905 as *Manual du Repertoire Bibliographique Universel*, which has 33,000 sub-divisions. The second edition was also published in French containing 70,000 sub-divisions. The third edition was published in German in 7 volumes of tables and 3 volumes of alphabetic index containing 140,000 sub-divisions. Full editions have also appeared in French, Spanish and Japanese languages. The publication of the English translation was started in 1943 entitled, “*Universal Decimal Classification*” and was designated as the fourth international edition. The British Standards Institution published the third revised edition of the abridged English Edition in 1961. The Abridged edition of the UDC has been published in 13 different languages.²¹

Fig. 3.4: The Founders of UDC



Paul Otlet
(1869-1944)



Henri La Fontaine
(1854-1943)

Table 3.4: Complete Editions of UDC

Editions	Year	Language	Title
1 st	1905	French	Manual du Repertoire Bibliographique Universel
2 nd	1927-1933	French	Classification Decimale Universelle
3 rd	1934	German	Dezimal Klassifikation
4 th	1943	English	Universal Decimal Classification

Table 3.5: Abridged Editions of UDC

Editions	Year
1 st	1948
2 nd	1957
3 rd	1961

3.9.1 Purpose of UDC

UDC is designed to serve the following purposes:

1. To provide a method for arranging books on library shelves in an order which would be helpful to the users i.e. shelf arrangement.
2. To provide a method of arranging sub-titles of the books themselves in a catalogue and printed bibliographies.
3. To classify the recorded knowledge.
4. To retrieve the document or locate the document.

3.9.2 Features of UDC

UDC has following features:

1. UDC is a practical scheme based on the demands of pamphlets, reports and periodical literature rather than the framework of a theory.
2. The scheme is based on DDC and claims to be the first Analytico-synthetic classification scheme.
3. It lays more stress to achieve co-extensive class numbers i.e. detailed specification than the achievement of a sequence of subjects for optimum helpfulness.
4. It avoids the lacunae of numerous private classification schemes by providing a standard system covering all the disciplines and may be used in any type of library.
5. It is a general classification scheme and not a bundle of special classification. It is rather an integrated whole.
6. The scheme reflects exhaustive enumeration in the schedule with due provision for synthesis or coordination.
7. It is amenable to adjustments to meet the special needs because a citation order in any given class allows alternative treatment.

8. The use of synthetic devices like colon (:), permits coordination of concept in different permutation, thereby minimizing the rigidity in the enumerated classification scheme.
9. An International body for its maintenance and revision with full cooperation of its users guarantees the continual existence of the system as a current and up-to-date one.
10. The terminology used in UDC helps in a comprehensive vocabulary of terms for indexing purposes.

3.9.3 Principles of UDC

1. It is a classification in the strict sense depending on the analysis of idea, content, so that the related concepts and groups of concepts are brought together and are arbitrary or haphazard systemization of alphabetical and other arrangements are avoided.
2. It is a universal classification system for which an attempt has been made to include in it every field of knowledge not as a patch work of isolates, self-sufficient specialists grouping but as an integrated pattern and correlated subjects.
3. It is constructed on the principals of proceeding from general to the more particular revision of the whole human knowledge into ten main branches each further subdivided decimally to the required degree.
4. It is a practical system for retrieval of information in which the order of subjects is not of much importance than the provision for detailed specifications.
5. It also accepts the principles of mutually exclusive classes, collection of related subjects and consistency of approach.
6. It has tried to remove national and racial basis to some extent by removing these factors and performing common facets.
7. Its notation consists of Indo-Arabic numerals used decimally which allows infinite hospitality and social sciences.

8. It employs certain notational techniques by which it is possible to link simple main class either with other main number with auxiliaries indicating place, time and similar commands used for categories.

3.9.4 International Medium Edition (IME-1993)²²

The British Standards Institution (BSI) is the authorized agency to bring abridged and medium editions in English language. The first International Medium Edition was published in 1987 under BS 1000 M: Part-1: Schedules, 1985 and Part-2: Alphabetical Subject Index in 1988. The International Medium Edition, English text Edition 2 was published in 1993 in two parts, under BSI 1000M. Part 1: Systematic tables. Part 2: Alphabetical Subject Index. This edition was drawn directly from the Master Reference File (MRF), the database maintained by the UDC Consortium.

A UDC entry contains three number elements viz., the class number at the left column, the class description at the right column and various amplifications such as notes, cross references and instructions for the number building.

3.9.5 Notations and Symbols

The UDC is based on the outline and the notational base of the Dewey Decimal Classification. The basic notation of UDC consists of Indo-Arabic numerals 0-9 used decimally, the different mathematical symbols and punctuation marks that have converted its notation into a mixed notation. The naught and decimal point have been omitted for convenience and have been implied. The numbers are simply indicated that is 0, 1, 2, 3, 4, 5----. UDC uses single digit numbers and every digit is a significant one. However, the use of different signs and symbols has added qualities to the notation of UDC.

Table 3.6: Symbols Used in UDC²³

Symbols	Expressed as	Significance
+	Plus	Connection of non consecutive numbers
/	Stoke	Connection of consecutive numbers
:	Colon	Relation
[]	Square Bracket	Relation (Subordinate)
=	Equals	Language
(0)	Brackets naught	Form
(1-9)	Brackets	Place
(=)	Brackets equals	Race and Nationality
“ ”	Inverted Commas	Time
A-Z	A to Z	Individual Sub-divisions
-	Hyphen	Special Analytical numbers
.00	Point Double Zero	Point of View
.0	Point naught	Special Analytical numbers

3.9.6 Structure of UDC

The whole universe of knowledge in UDC is divided into two categories.

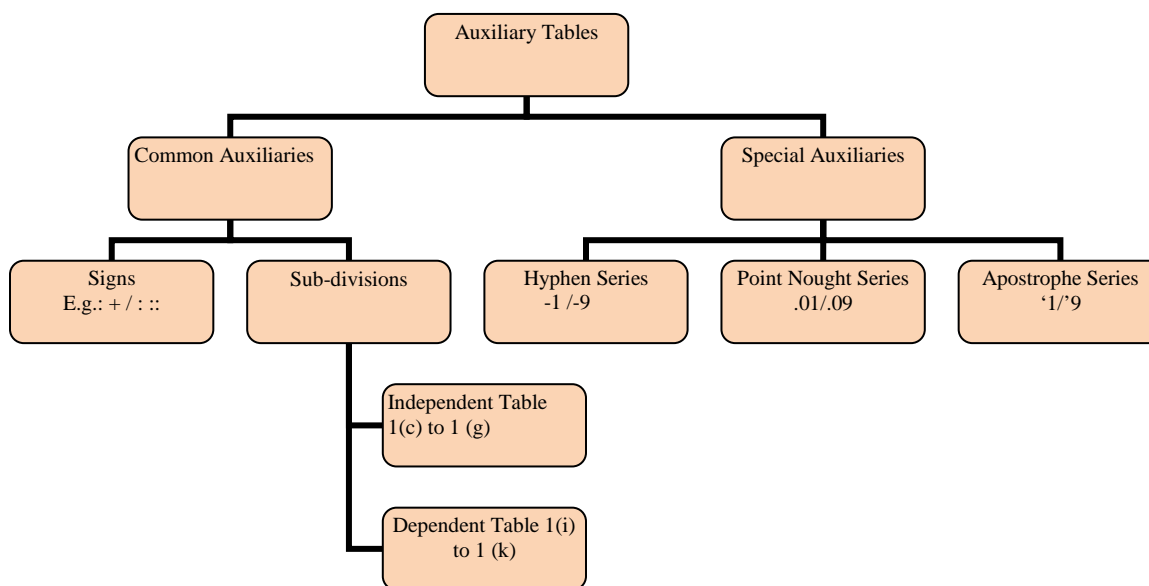
1. Systematic Tables - The systematic tables are also called schedules which give the notational number of all basic class from 0 - 9. The general order and nomenclature of the main table is the same as DDC. The whole universe of knowledge is divided into ten main branches denoted by decimal fractions, Indo-Arabic numerals. UDC uses one-digit numbers for the main class. The main class numbers and their subdivisions are divided by a continuous extension of the decimal fraction on the principle of proceeding from general to specific. The practice of DDC to use a dot after every three digits has been retained in UDC. In UDC, the 4th class is kept vacant for future subjects.²⁵

Table 3.7: Main Tables in UDC

0	Generalities: Methodology, Documentation, Scripts etc.
1	Philosophy, Metaphysics, Logic, Ethics, Psychology
2	Religion, Theology
3	Social Sciences; including Statistics, Law, Education
4	Vacant
5	Pure Science, Mathematics and Natural Sciences
6	Applied Sciences, Medicine and Technology
7	The Arts including Architecture, Photography, Recreation, Entertainment
8	Language, Linguistics, Literature
9	Geography, Biography, History

2. Auxiliary Tables - The introduction of Auxiliary Tables has alienated UDC from DDC thereby making it a Faceted Classification Scheme. The auxiliary tables has made UDC universal, permitting any desired combination and modification of basic numbers to demote the most complex subject. They are a part of volume 1, which gives the notational numbers of all categories of common auxiliaries, which are supposed to add with basic class for sharpening the class numbers. These are attached to the basic class with their respective symbols. They permit much more scope for synthesis, which can be achieved with DDC. The auxiliaries are a set of facets and facet indicators, which enable the classifier to synthesize freely.

Fig. 3.5: Division of Auxiliary Tables



Common Auxiliary Tables - The common auxiliary tables denote generally recurrent characteristics meaning features common to all, which are applicable throughout the main tables and provide means of expressing interactions between subjects, which helps in eliminating repetition of one and the same concepts such as: language, form, place and time. The common auxiliaries tables are divided into two types based on the use of symbols: (a) The Signs and (b) The Sub-divisions. The common auxiliary tables are indicated by two digits in which the 1st digit indicates the section and the 2nd indicates the specific table. The signs and symbols are broadly grouped into: Table 1 (a)–Coordination and Extension and Table 1(b)–Relation, Sub-grouping and Order Fixing. The common auxiliary subdivisions are divided into two: Independent and dependent. The independent auxiliary constitutes Table 1(c) to 1(g) and dependent are found at Table 1(i) to 1(k).

3.9.7 Alphabetical Subject Index

Alphabetical Subject Index, the second Part of UDC was published in 1988. It is a computer generated index, produced by permutation of terms, taken from Part-1 Systematic Tables. The arrangement is word by word. As the cross references were completely eliminated from the index, a large number of synonymous terms were included therein.

Most of the terms in the index do not indicate the context in which they appear in Part-1. However, qualifiers to certain sub-entries, taken mainly from class description, are provided. This makes imperative for the users to consult the tables to fully understand, the different contexts of the terms indexed. The index is intended to provide access to UDC classes set out in the schedule. It is not a substitute for the schedule, but enables fast access to UDC classes through the index terms arranged alphabetically.²⁶

3.9.8 Revision Policy

The Scheme is revised and updated from time to time by the International Federation for Information and Documentation (FID). The development and maintenance of UDC is

achieved by FID at Hague through its ultimate coordinating body i.e. Central Classification Committee. This committee is assisted in its work, directly or indirectly by the National Committees, Special Subject Committees in each Country and International Subject Committees. Thus, it follows a decentralized procedure for revision of the UDC. The revision is done in the following three ways:

1. Extension of topics by more detailed sub-divisions.
2. Minor changes in the existing class numbers of sub-divisions.
3. Starvation Policy introduced by Donker Duyvis. This policy assumes a fairly state of collection and opportunity for re-classification. Donker Duyvis used the unused notation in the dynamic and rapidly changing subject.

If the users of the UDC want to suggest amendments or extensions to the schedules, they have to suggest the same to a National Body in their respective Countries. The changes in the UDC are communicated to its users by a half-yearly bulletin titled Extensions and Corrections to UDC. From the end of 1991 responsibility and updating was assumed by a new organization, the UDC Consortium (UDCC) who publishes the bulletin, Extensions and Corrections of the UDC.

3.9.9 UDC in Computer Based Information Retrieval Systems²⁷

It was suggested that as far back as 1934 that UDC was suitable for 'mechanical sorting.' The Royal Society's Scientific Information Conference in 1948 noted the need to explore the potentialities of UDC in mechanized retrieval. But this suggestion did not get for the desired support for investigation and it did lie dormant in the forties and fifties. However, the research programs which were carried out in the United States and in other countries like Britain, Germany, Denmark and Switzerland in the sixties helped UDC to be usable as indexing languages for computerized control and processing of information in the fields of knowledge. The most significant research work in this respect was the American Institute of Physics UDC Project under Freeman and Atherton. The results of this research work formed the main theme of the first seminar on UDC in mechanized

retrieval system held at Copenhagen in 1968. The second seminar in this regard was held in Frankfurt in 1970. Both the seminars amply demonstrated the feasibility of using UDC as the indexing language in a mechanized system either in batch processing or interactive mode. Other experiments carried out during the later sixties in using UDC for special mechanical applications for example: the indexing of Geo-Science Abstracts and the maintenance of user-profiles in the metallurgical field clearly supported the use of UDC for mechanized retrieval systems.

3.9.10 UDC and UNISIST²⁸

It was thought in the FID circles of marking UDC 'Roof Scheme' under which could be hung the relevant special classifications, thesauri or descriptor lists, as well as the far more detailed UDC divisions themselves for those who prefer a homogenous UDC based system. This concept received encouragement in the efforts to make UDC adopted as 'Switching language' for UNISIST (United Nations Information System in Science and Technology) the joint project of ICSU/UNESCO for a world scientific information system. An ASLIB study for the UNISIST stated the UDC, was found the least satisfactory' of the major existing schemes. But still there are some reservations on the part of UNISIST to adopt UDC under its present form unless it can be presented as a concise, updated and well balanced schedule more satisfactory than the others. Eminent writers such as Jean Perrault, H. Wellisch and F.A. Schmidt have argued the case for a radical form. There are now two opinions about the revision of UDC. Some people opine, as stated already, a thorough revision so as to meet the opportunities afforded by UNISIST and the challenges posed by mechanization. Others want the revision of UDC must be made slowly for streamlining and overhauling of classes in an evolutionary way rather than by a thorough overhaul of the existing structure. It is still to be seen how far UDC can be adopted by UNISIST for its Broad System of Ordering.

3.9.11 UDC CONSORTIUM²⁹

In January 1992, the overall responsibility of UDC has been taken over by the Consortium. Since then UDC is being operated as a Consortium under the Dutch law in the form of a non-profit organization and is known as UDCC. It is governed by an Executive Committee consisting of five leading publishers of Belgium, Japan, Netherlands, Spain, and United Kingdom, sixth member being the FID. The Secretariat of the UDCC is the Royal Library, at The Hague. The consortium is collectively responsible for funding, developing and managing the classification. The UDCC is making all necessary efforts to develop UDC as a tool for knowledge organization; to transform it in a versatile tool which may meet the needs of its users in a variety of different circumstances and areas; and a tool for information retrieval. UDC, therefore, is being developed revised keeping in view the following:

1. To develop UDC into a fully faceted classification system;
2. To remove those inconsistencies that permeate in the classification and hinder in providing a synthetic structure;
3. To eliminate compound concepts and enumerate only simple terms leaving synthesis part for the classifier;
4. To radically revise the schedules.

3.9.12 UDC–Master Reference File³⁰

The UDC Master Reference File (MRF) is a database that contains the UDC schedules together with records required for administration, maintenance and archiving. It contains the definitive, the authorized version of the UDC and is maintained as a working tool for the UDC Consortium. The UDCC creates and maintains the MRF database in order to manage the content of the UDC, to determine the need and priority for revisions, and to keep track of changes over time. To safeguard its contents, a duplicate of the database is used for regular maintenance and updating during the year. Once finalized, this is used to create the new master file each year (during December/January). The new version of the MRF containing that year's changes is used to provide the output for distribution to

Consortium Members and licence holders and, if their applications are approved, also to other users.

Proposals for a change to the UDC schedules are published annually in "*Extensions and corrections to the UDC*" together with the latest approved changes. Copies of each annual edition of Extensions and corrections are printed during November and normally available for sale in December. All agreed cancellations are published on the UDCC web site. The MRF is the definitive source on which publishers base their UDC publications or services. Users other than publishers can also benefit from direct access to the MRF, whether for classification, research or other purposes. They may need to support their specific use, in particular, by employing a suitable software application.

The MRF database was originally designed using UNESCO's CDS/ISIS software package that supports international standards for the bibliographical data exchange format (ISO 2709). At that time the core of 60,000 class numbers was chosen as a manageable but representative selection of recorded information and knowledge - it is now over 68,000 numbers (2010). In the period 2007-2009 the UDC MRF database was migrated to a new mySQL database with many added features including an enhanced data structure for UDC content management and access. English is the working language of the Consortium and the output from the MRF is distributed in English.

3.9.13 Significance of UDC³¹

The UDC is essentially a practical system for numerically coding information, so designed that any item, once coded and filed correctly, can be readily found from whatever angle it is sought. It should be regarded as a scientific classification, with the introduction of an auxiliary apparatus of connection and relation signs, which are lacking in the original DDC and it has made UDC universal. The significance of the UDC System lies in its immediate application in classifying whole field of knowledge. Some of the strengths of UDC that account for the success are:

1. It was the first system of classification, which was designed to provide for the detailed control of specialized information stores.
2. It now provides a switching code for linking otherwise incompatible languages. Codes or natural languages in many highly specialized information systems are proliferated.
3. In the last two decades, experiments in many countries have shown the great possibility achievable with computers and UDC.
4. It is a classification system in the strictest sense depending on the analysis of ideas so that related concepts have brought together thus avoiding alphabet arrangement, which also brings in systemization of an haphazard manner.
5. It is widely used throughout the world.
6. The notation is simple and easily understood.
7. UDC schedules provide the clear directions for the number building.

UDC is universal in the sense:

1. It is a general scheme of classification covering all aspects of knowledge.
2. It aims to specify any combination of concepts necessary whether derived from within a subject field or between different subjects.

One of the most important features of UDC is its list of auxiliary tables. It is also an extension of the principle of synthesis. It covers various aspects likely to appear as parts of several different subjects.

3.10 Colon Classification (CC)

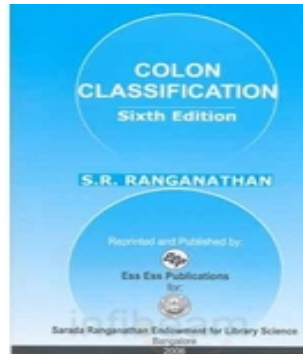


Fig. 3.6: Colon Classification

Colon Classification is one of the most systematic schemes of Library Classifications used in many libraries in India and a few libraries abroad as well. This was devised by the late Dr. S.R. Ranganathan. He found the existing scheme of library classification unable to cope with the multidimensional dynamic growth of universe of subjects. Colon Classification proceeds in a different manner in spite of enumerating all possible subjects and their sub-divisions, it analyses the subject in its various components and places them under five fundamental categories known as personality, matter, energy, space and time. To connect or to synthesize the various components of a subject, different connection symbols have been provided. Readymade class numbers are also available, but to build a class number, one has to analyze and pick up the possible isolates belonging to different fundamental categories which are then put together with the help appropriate connecting symbols. Colon Classification involves analysis and synthesis that is why it is known as the 'Analytico-synthetic' scheme of classification. The number building makes the scheme somewhat complicated and difficult to work with, but once understood and followed it works efficiently and effectively. The Colon Classification is a general scheme which aims to classify by subject all kinds of documents - books, periodicals, reports, pamphlets, microforms and electronic media in all kinds of libraries. CC is a landmark in the modern classification thought and has greatly influenced the modern classification research and developments.

3.10.1 Genesis of Colon Classification

Shiyali Ramamrita Ranganathan, the author of Colon Classification began his career as a teacher of mathematics. However in 1924, he was appointed Librarian of the University of Madras. He went to England in 1924 to study library science at the University of London, School of Librarianship. Dissatisfied with the existing schemes of library classification, his experience led him “to think that a change was necessary in the basic principles on which schemes of classification are established. While in London, Ranganathan designed a layout for the new scheme and constructed the schedules of a few subjects for different facets as samples. In about a year, he found the colon device to be extremely useful. With the help of few subject specialists, the schedules were completed in 1927. In 1932, the scheme was ready to be printed. Thus, in 1933, the first edition of colon classification was released. Till now, six editions including the reprinting of 6th edition, published in 1963 of CC have been published.³²

Fig. 3.7: Father of Colon Classification



(1892-1972)

3.10.2 Three Versions of Colon Classification

Three versions of Colon Classification have been recognized: **Version 1** (1933-1950): Rigidly faceted era includes CC1, CC2 and CC3. This version was severely rigid and pre-determined, though fully faceted. **Version 2** (1950-1963): Analytico-Synthetic era includes CC4, CC5 and CC6, which was a great improvement over the first one, but some

rigidity remained with regard to levels of facet within a round. **Version 3** (1963-1987): Freely-Faceted Era includes CC7, which is considered as a freely faceted scheme for library classification.³³

3.10.3 Different Editions of Colon Classification

The Colon Classification (CC) first designed from 1924 to 1928 and published first in 1933 by the Madras Library Association is now in its 7th edition released in 1987. The sixth edition still the most popular one was published in 1960. A reprint with some amendments contained in an annexure was issued in 1963. This manual aiming to be a guide to the use of CC-6, explains the construction of class numbers by this edition (1963) which was reprinted in 1964 and 1969 by its publishers Asia Publishing House Bombay. Since 1989 this edition with annexure has been reprinted many times by the Sarda Ranganathan Endowment for Library Science.

Table 3.8: Editions of CC

Editions	Year
1 st Edition	1933
2 nd Edition	1939
3 rd Edition	1950
4 th Edition	1952
5 th Edition	1957
6 th Edition	1960
7 th Edition	1987

CC1 (1933) - In the first edition of colon classification, schedules were provided for diverse facets in each basic class. The colon was used as a notational device for synthesis. The use of symbol “:” was an important part of the scheme. Therefore, the scheme was named Colon Classification. The features of CC1 are as follows:

1. It provided schedules for different facets in each basic class.
2. It provided special schedules for common subdivisions, geographical divisions and language divisions.

3. It provided rules for the construction of class numbers by means of combining the number taken from different facets within a given basic class.
4. It used mixed notation, consisting of capital letters, small letters, Arabic numerals and the colon.
5. It used decimal fraction notation, as well as octave notation for the purpose of hospitality in array.
6. It used eight special devices the colon device, geographical device, chronological device, favored category device, classic device, alphabetical device, subject device and bias number device.
7. It gave a new phenomenon for constructing the book number so that the books having the same class number could be individualized, and
8. It used the concept of phases.

CC2 (1939) - This edition incorporated a number of improvements. It used, for the first time, the concept of fundamental categories (personality, matter, energy, space and time) to serve as the basis of classification.

CC3 (1950) - This edition provides a facet formula for each basic class in terms of fundamental categories.

CC4 (1952) - Different indicator digits for different facets going with different fundamental categories were made use of, as illustrated below:

, Comma for personality

; Semi-colon for matter

: Colon for energy

. Dot for space

. Dot for time

The introduction of the above indicators digit led to a reconstruction of the scheme. This edition also introduced the concepts of rounds and levels. The concept of fundamental categories was used in a concrete manner.

CC5 (1957) - It introduced substantial changes in the rules and in various schedules.

CC6 (1960) - Substantial changes were made in the various schedules. An attempt was made to avoid the use of Greek letters. The sixth edition was reprinted in 1963, with some important amendment. The major change was the introduction of indicator digit – the inverted comma (˘) instead of dot (.) for the time facet.

CC7 (1987) - The schedule of the seventh edition of Colon Classification has been given by A. Neelameghan, M.A. Gopinath and S. Seetharama. CC7 provides the small schedule of basic classes, the isolate going with each facet in different basic classes are given. In addition, common isolates are also listed thus the class numbers are not readily provided, but have to be constructed. The schedule in CC7 consists of certain standard unit schedule, corresponding to standard pieces in a meccano set. By combining these standard pieces, one can construct a variety of objects. Similarly, by combining the standard unit schedule through various permutations and combinations, one can construct the class numbers for different specific subjects. CC7 is a freely faceted analytico-synthetic scheme, because the sequence of component ideas in a compound subject can be analyzed on the basis of a set of guiding principles, and not merely determined with the help of the pre-determined facet formula.

3.10.4 Main Classes in Colon Classification

The concept of main class is traditional and no subject or document is without a basic class, it means that a main class is always present in the subject. The following are the main classes:

Table 3.9: Main Classes in CC

Main Classes	Name of the Subject	Facet Formula	Description
Z	Generalia	$z[P_1].[P_2][P_3],[P_4]$	By ‘Generalia’ is meant a class into which should go any publication which deals with several subjects and cannot go into any other single main class enumerated in the schedule of the Main Class. The bare digit small ‘z’ is to hold only

			ordinary exposition of 'Generalia'. [P1] and [P2] are to be got by (GD) and (CD).
2	Library Science	2[P];[M]:[E][2P]	[P] is the kind of library. [M] is the kind of document under process; its isolates are the same as that of [P] of a Generalia Bibliography. [E] Cum [2P] are library techniques, procedures and processes.
B	Mathematics	B1 – Arithmetic B2 – Algebra B3 – Analysis B4 – Other Methods B5 – Trigonometry B6 – Geometry B7 – Mechanics B8 – Physico-mathematics B9 – Astronomy	The main class Mathematics is divided into 9 Canonical Divisions.
C	Physics	C1 – Fundamentals C2 – Properties of Matter C3 – Sound C4 – Heat C5 – Light, Radiation C6 – Electricity C7 – Magnetism C8 – Cosmic Hypotheses	The main class Physics is divided into 8 Canonical Divisions
D	Engineering	D[P],[P2]:[E][2P]	[P] is the kind of work. [P2] is the part of work. [P3] is the part of work of D6. [E] cum [2P] are various engineering operations.
E	Chemistry	E[P]:[E][2P]	[P] are elements or compounds, organic and inorganic, collectively termed as substance number. [P2] are organic derivatives. [E] cum [2P] are chemical processes and manipulations.
F	Technology	F[P]:[E][2P]	[P] is the substance facet. Its isolates are same as the [P] of E Chemistry. [E] cum [2P] means the problem facet as well as the process facet. Isolates of the problem facet are to

			be taken from E chemistry.
G	Biology	G[P]:[E][2P]	[P] is the kind of life. [E] Cum [2P] is the biological problem of life.
H	Geology	H1 – Mineralogy H2 – Petrology H3 – Structural Geology H4 – Dynamic Geology H5 – Stratigraphy H6 – Palaeontology H7 – Economic Geology H8 – Cosmic Hypotheses	The main class Geology is divided into 8 Canonical Divisions
HZ	Mining	HZ[P],[P2]:[E][2P]	[P] is the ore. This forms the substance facet and is to be taken from the [P] of E Chemistry. [P2] is the part of the work. [E] Cum [2P] forms the process involved in mining.
I	Botany	I[P],[2P]:[E][2P]	[P] is the natural group. [P2] is the part or organ of the plant. [E] Cum [2P] denotes the life processes. Its isolates are same as that the [E] cum [2P] of G Biology.
J	Agriculture	J[P]:[E][2P]:[2E]	[P] is denoted as plants – isolate. The first significant digit of the plant number is utility number, the second is the part number and the third is the favored country number. [E] is the problem isolate. [2P] is denoted by substance [2E] is denoted by operation isolate.
K	Zoology	K[P]:[E][2P]	[P] is the natural group isolate and [E] and [2P] is the problem isolate, and are the same as those in [E] [2P] of the main class G Biology.
KZ	Animal Husbandry	KZ [P]:[E][2P]:[2E][3P]	[P] is the kind of animal isolate. [E] is the problem isolate and the techniques of animal husbandry. {2P} is the extension of [E]. [2E] and [3P] are the form division.

L	Medicine	LP [P]:[E][2P]:[2E][3P]	[P] is the body organ. [E] cum [2P] is the biological problems of human life; working and failure of human machine. [2E] cum [3P] is the prevention or treatment or pathology of diseases.
LZ	Pharmacognosy	LZ3 [P]:[E][2P] LZ5 [P], [P2]	This main class has been divided into canonical classes: LZ3 Pharmacology, LZ5 Pharmacopoeia, LZ8 Pharmacy. LZ3 in this [P] is the substance, isolates in this facet are the same as enumerated in [P] in the main class E Chemistry. [E] is the action of the drug. [2P] is the body organ on which the drug action takes place which is to be got by (SD). LZ5 in this [P] is the nation isolate that stands for the country which is to be got by (GD). [P2] is the kind or order isolate in this facet are enumerated such as official, secondary and tertiary.
M	Useful Arts		
Δ	Spiritualism	Δ[P],[P2]:[E][2P]	[P] is the kind of religion, the domain of spiritual and mystic experiences. Its isolates are same as in the [P] of Q religion. [P2] is the entity isolates or is the agency of experiences. [E] cum [2P] is the problem facet which involves methods, techniques and ultimate results of mystic and occult experiences.
N	Fine Arts	NA Architecture ND Sculpture NN Engraving NQ Painting NR Music	
O	Literature	O[P],[P2][P3],[P4]	[P] stands for language of the literature. Its isolates are to be taken from common schedule of languages given in the Chapter 5 of CC. [P2] stands for the form of literature that

			is drama, poetry or fiction. [P3] stands for the author facet to be got by (CD). [P4] stands for the individual named work of a given author. It may be got by group notation or by (AD).
P	Linguistics	P[P],[P2][P3]:[E][2P]	[P] is the language under study. [P2] is the variant stage and its isolates are enumerated in the schedule. [P3] is the linguistic element whereas [E] cum [2P] are the linguistic problems.
Q	Religion	Q[P]:[E][2P]	[P] is the religion itself. [E] cum [2P] enlists the religious practices and beliefs.
R	Philosophy	R1 – Logic R2 – Epistemology R3 – Metaphysics R4 – Ethics R5 – Aesthetics R6 – Favored System (1) Indian Philosophy R7 – Favored System (2) R8 – Other Systems by (SD)	The main class Philosophy is divided into 8 Canonical Divisions
S	Psychology	S[P]:[E][2P]	[P] is the individual human being. [E] and [2P] enlist psychological activities and processes.
T	Education	T[P]:[E],[2P],[2P2]	[P] is constituted of various types of educands-the level or kind of students. [E] is constituted of educational techniques or problems. [2P] cover the subject taught which is to be got by (SD). [2P2] enlists methods or physical medium of education.
U	Geography	U[P].[S]‘[T]	The first division is on canonical lines, rich and varied subjects have been sparsely enumerated. Space and time are to be taken from their respective schedules.
V	History	V[P],[P2]:[E][2P]‘[T]	[P]is the community as distinguished from the geographical

			area. Its focus to be got by (GD). [P ₂] is the organ of the government. [E] and [2P] covers the activities, functions and policies of the government.
W	Political Science	W[P][P ₂]:[E][2P]	[P] is Type of State [P ₂] is the organ of the state; its isolates are same as the [P ₂] of the V History. [E] cum [2P] cover activities, politics and function of the state., its isolates are also same as those of V History.
X	Economics	X(System), (Specials) [P];[M]:[E][2P]	[P] is Business or economic agency [M] is the medium of currency which is only applicable to X61 Money and [E][2P] is economic problems and activities.
Y	Sociology	Y[P]:[E][2P]:[2E][3P]	[P] is the community or social group-isolates enumerated. It can be further sharpened by (SID), (GD) and (SD). [E] and [2P] facet covers activities, traditions, social problems. [2E] and [3P]: secondary problems include conservation, development, and prevention correction of social ills.
Z	Law	Z[P],[P ₂], [P ₃],[P ₄]	[P] is the community over which a given law has the jurisdiction, which is got by (GD) in case of nation and by (SD) in case of cultural community. Here [P] stands for community and not a subject. [P ₂] and [P ₃] have been termed as Law I and Law II respectively. [P ₃] isolates vary according to [P ₂]

3.10.5 Notational System

The Notational System of Colon Classification used for assigning numbers to basic subjects consists of:

1. 23 Roman small letters (a...z excluding i, l, o)
2. 10 Indo Arabic numerals (0-9)
3. 26 Roman Capital letters (A--Z)

4. Bracketed numbers
5. Indicator digit hyphen (-) and asterisk (*)

Z, 0 (zero) or 9 (nine) is used to represent an empty digit. T,V,X & Z are used as emptying digits, however, when these occur as an initial digit, then they are deemed semantically rich digit. U, W, & Y have been postulated as empty-emptying digit.

The notational system used by CC to assign numbers to isolate as speciators consist of the following:

1. Ten Indo-Arabic numerals (0---9)
2. Twenty Six Roman capital letters (A---Z)
3. Twenty Six Roman small letters (a---z excluding i, l, o)
4. Bracketed Numbers
5. Indicator digits * ” ←) & ‘ . ; , - = + → (

3.10.6 Common Isolates

An isolate in the CC is a fundamental and ultimate unit of knowledge. By itself it cannot stand; so alone it cannot make a subject. The isolates enumerated once for all and which remain the same for every main class are veritably termed as Common Isolates. They represent the auxiliaries and not part of the proper subject. They are the recurring concepts pertaining to the form of presentation of the extra textual aspects of a document. Since they are listed once for all, their names and notational symbols remain the same wherever they occur. They are attachable to most of the classes, though not all. They stand for divisions such as encyclopedia, dictionary, periodical, commission report and conference proceeding. Ranganathan divided the common isolates into two categories:

1. Anteriorizing Common Isolates (ACI) – When ACIs are attached to a subject they give it an anterior position over other subjects of the same class. They do not require any connecting symbol and documents attached with ACI from the approach documents on the shelves. They are of three kinds: Applicable before Space Facet, Applicable after Space Facet, and Applicable after Time Facet

2. Posteriorizing Common Isolates (PCI) – PCI are quite different as they give posterior position to the document to which they are attached. It means a class number fitted with a PCI will come after the same class number without it and they require a connecting symbol for their attachment. They are of two kinds: Energy PCI and Personality PCI. Energy PCI are attached with a colon and Personality PCI are attached to any class with a comma, mostly pertain to institutions and associations.

Table 3.10: Anteriorizing Common Isolates (Applicable before Space Facet)

Number	Term	Facet Formula
A	Bibliography	a[T]
C	Concordance	
D	Table	
E	Formula	
F	Atlas	f[T]
K	Cyclopedia	k[P],[P2]
M	Periodical	m[P],[P2]
N	Serial	n[P],[P2]
P	Conference Proceedings	p[P],[P2]
V	History	v[S],[T]
W	Biography General Individual Autobiography Ana Letters	w[S],[T] w[P] w[P],1 w[P],2 w[P],4
X	Works (Collection or Selection General Individual	x[S],[T] x[P]
y1	Program of Instruction	
y2	Syllabus	
y3	Synopsis	Same as for w
y4	Scope	
y7	Case Study	
y8	Digest	

Table 3.11: Anteriorizing Common Isolates (Applicable only after Space Facet)

Number	Term	Facet Formula
R	Administration Report	
S	Statistics9If Periodicals)	s[T]

Table 3.12: Anteriorizing Common Isolates (Applicable only after Time Facet)

s	Statistics(if stray)	V	Source material
t	Commission report	v5	Literature
t4	Survey	v6	Tradition
t5	Plan	v7	Archeology etc., (as in V History)
t6	Ideal	v8	Archive (as in V History)

Table 3.13: Posteriorizing Common Isolates: Energy Common Isolates

b1	Calculating	f3	Experiment
b2	Designing	f4	Discussion
b6	Measuring		
		G	Criticism
c1	Weighing	P	Drafting
		R	Reporting
F	Investigation	U	Surveying
f2	Observation		

Table 3.14: Posteriorizing Common Isolates: Personality Common Isolates

b	Profession	f2	Observational
		f3	Experimenting
d	Institution	f4	Discussional
		f7	Yogic (Asrama)
e	Educational (in which the subject, represented by the host class, is taught)		
		G	Learned society
e2	Lower	H	Industrial body
e4	Higher	K	Commercial body
		W	Administrative department of Government
f	Investigating		

3.10.7 Colon Classification Index

The index of CC refers only to elementary terms, never to compound subjects. The relative aspects of a subject are provided only in the form of class numbers, not being named as in DDC or UDC. CC6 has provided the following four indexes: General Index; Geographical Index; Two Indexes to Natural Groups in Botany and Zoology. The entries have been arranged by word by word order following the principle of nothing before something.

3.10.8 Book Number and Call Number

Ranganathan is of the view that a document comprises of Gross body (physical carrier) subtle body (language, style, viewpoint, presentation, etc) and the soul (knowledge and subject). In a library one cannot arrange books distinctively without accounting for these physical peculiarities. Therefore, it is generally seen that the class number alone fails to individualize a book in a library or in a bibliography. Many books in a library may get the same class number by virtue of having the same specific subject. In such cases, to assign a unique individual place to a given document - as it is the requirement of every library - these documents are given a further notation, also called External Notation which, is based on some non-subject considerations, used to arrange documents within a given specific subject, is known as a book number. The function of book number starts where that of a class number ends. Book number may be based on either some or all of the considerations such as author, title, edition, language, physical form or the year of publication or even the place of publication.

The Colon Classification book number facet formula along with indicator digit:

[L] [F] [Y] [A].[V]-[S];[C]:g[EVN]

Where in

L – Language of the document

F – Form of the document

Y – Year of publication of the document

- A – Accession part of the year number
- V – Volume number of the document
- S – Supplement number of the document
- C – Copy number of the document
- G - Evaluation number
- EVN – Accession part of the evaluation number

3.10.9 Use of Colon Classification

CC is relatively new scheme in at least two respects:

1. With regard to its period of origin, and
2. With regard to its methods.

Since the scheme was first published in 1933, it is comparatively younger than some of the most famous schemes, like DC, UDC and Bliss Bibliographical classification. Certain methods used in CC have influenced considerably the improvement work of other schemes. Considerable research was undertaken on CC mostly by DRTC and also by CRG, London. The dynamic theory of classification given by Ranganathan has contributed a lot to the development of general theory of classification. His theory of classification has influenced the development of a number of subject indexing languages, such as, thesauro-facet, chain indexing, POPSI, PRECIS.

Table 3.15: Advantages and Disadvantages of Major Classification Scheme

No	Name of the Scheme	Advantages / Disadvantages of the Scheme
1.	DDC	<p style="text-align: center;">Advantages</p> <ol style="list-style-type: none"> 1. The Dewey Decimal Classification (DDC) system has a long history (127 years) of expansion and adaptation to the needs of the communities it serves. 2. The DDC is published in both full and abridged versions, as well as, now, online versions of the full and abridged editions in a format called ‘Web-Dewey.’ 3. The DDC uses very well recognized Arabic numerals and the numbered notation makes it easily understandable from one

		<p>culture to another.</p> <ol style="list-style-type: none"> 4. The DDC breaks down into relatively well structured and ordered disciplines, divisions, and sections. Thus, the scheme is hierarchical, like a family tree, showing the relationship of specific subjects to the parent subject. 5. The DDC has bi-weekly updates to its current edition put out online. 6. The class numbers are easy to write, type and remember – at least to hold in one’s mind long enough to get from a library’s catalogue to the shelves. 7. The Dewey scheme has an excellent relative index and the schedules are inexpensive. 8. The scheme allows for the close classification (lengthy numbers for specific subjects) or broad classification (shorter numbers where fewer details are required). 9. Alternative placing is provided for several subjects so that the differing libraries can cater to the requirements of their own clientele. 10. The Classification scheme allows for expansion so that new subjects can be included. This facility is known as ‘hospitality’. <p style="text-align: center;">Disadvantages</p> <ol style="list-style-type: none"> 1. The provision of only ten main classes’ means that the base is too short, resulting in lengthy classification numbers. 2. The limitations of division and subdivision by only 10 places leads to the squeezing of subjects into a conglomerate last division called ‘others’. 3. The arrangement of classes has been criticized, especially the separation of language from literature; social sciences from history; psychology from medicine. 4. There is a bias towards Protestant/American aspects prevalent in both the history and religion disciplines. These problems are being addressed in each new revision and edition. 5. Within the DDC there are some disciplines that are closely related, yet quite separate numerically like literature 800-899 and languages 400-499. 6. Within the DDC there are also some classes like ‘Technology,’ in the 600s which the call numbers are very crowded, and others that are very sparse. 7. The DDC is not as easily expandable as classification systems like the Library of Congress Classification system when new subjects or technologies emerge. 8. There is the potential for very large classification call numbers as a result of number building, and the need for extreme accuracy by
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		some libraries.
2.	UDC	<p style="text-align: center;">Advantages</p> <ol style="list-style-type: none"> 1. Since UDC is a general scheme of classification, it covers the whole field of human knowledge. The process of dividing a class into ten subclasses is carried to the required degree of specificity. The required degree of detail is achieved with the help of common and special auxiliaries. The resultant subject description is of utmost precision. 2. Due to the UDC's incredibly flexible disposition it naturally lends itself to conversion in a digital computer format. 3. The UDC like the DDC has been published in Full, Abridged, and Web formats. 4. The UDC lends itself very well to applications in other languages and scripts. Its notation overcomes all language and provides worldwide use. 5. Due to its versatility it can be utilized in multiple fields including museums, archives, libraries, and in documentation. 6. Due to its abbreviated nature and vocabulary it is easily updated and enables worldwide standardized indexing. 7. It is easier to manipulate the UDC to accommodate advances in knowledge because of greater scope for creating new synthesized numbers for concepts or simply inserting a new number as required without the need to reach general editorial agreement. 8. Its notation consists of numerals and signs, which are understood internationally. The decimal notation allows maximum hospitality for the admission of new terms. 9. It forms a carefully organized and comprehensive vocabulary of terms (in its index) for indexing and retrieval. It may be used as a thesaurus. 10. It is ideally suited to special libraries, as its full edition contains subject schedules of minute description. Special subject editions are also 'separately available. The medium edition can take care of almost all subjects. <p style="text-align: center;">Disadvantages</p> <ol style="list-style-type: none"> 1. The notation often tends to be long and appears clumsy. As a result, its use on the shelves becomes difficult. 2. User participation in revision has created unevenness in the scheme at places. It also delays revision of schedules until they become out of date. 3. The UDC lacks conformity and exhibits a lack of uniformity across libraries that use it. 4. The UDC is uneven in its coverage of modern topics and some of

		the expansions of UDC are too detailed.
3.	CC	<p style="text-align: center;">Advantages</p> <ol style="list-style-type: none"> 1. Due to a sound theory and the provision of a hospitable notation, CC is capable of giving a unique number for almost every subject. 2. The systematic order and the degree of detail due to analysis and synthesis are two great virtues of CC. As a result, it has achieved two objectives: i) provision of a helpful order in each class, and ii) facility in locating a given topic whether it is simple, compound or complex. 3. It is claimed that CC can be effectively used in a computer-aided document finding system. <p style="text-align: center;">Disadvantages</p> <ol style="list-style-type: none"> 1. The major drawback of CC is that there exists no machinery to keep up the revision work as in the case of DDC and UDC. 2. The guidance provided in the recently published seventh edition is not enough and lacks clarity at places. 3. It calls for a manual with numerous examples to explain the application of various rules. 4. It is far from simple, the virtue most cherished by the users.

Table 3.16: Comparative Study of Three Major Schemes of Classification

S. No.	Description	DDC	UDC	CC
1.	Main Outline	DDC comprised of 10 Main Classes with 9 sub-classes and 9 sub classes of each sub class. That is beginning with most general subjects to more specific ones.	The scheme follows DDC except addition of some new sub-divisions and signs of combination for indication of relation of subjects.	Main classes are comprised of Generalia(1 to 9) and 26 Main Classes (A to Z) of both Science and Humanities. The first 13 classes comprise the Science and applications and the last 13 comprises of Humanities.
2.	Notation	Notation originally was pure; later on some letters have been used. Three figure minimum notations have been	Mixed notation consists of figures letters and other symbols. The decimal point is repeated after every	Notation is extremely mixed consisting of Arabic numerals, roman alphabet (both capital and small)

		used.	three figure.	and symbols and signs including colon. Arabic numerals (1-9) are assigned to the Generalia class and capital letters of the roman alphabet are assigned to the specific main classes. Notation is faceted. It is synthetic it uses fraction on principle for both numbers and letters and achieves hospitality in both array and chain
3.	Form Division	DDC uses series of nine common form divisions and these with minor alternatives are used with same meaning throughout the scheme	Form divisions (01-09) retain the original Dewey significance but have been redefined and greatly expanded	In CC, common subdivisions use of lower case letters with decimal subdivisions where necessary
4.	Mnemonics	The principle mnemonics features are: Form divisions, Geographical divisions, and Language divisions	Number building devices as well as auxiliary schedules are mnemonics features	The scheme is faceted one and enjoys a considerable mnemonic quality by the use of same facets and common facets
5.	Geographical Divisions	Geographical subdivisions are provided by the use of the numbers 930-999. Every continent, country and division of a country is given a number. It also	Place sign (1)-(9) is a special table indicating physical places. (3)-(9) are the regular geographical numbers of Dewey used without the initial '9' and	Common geographical divisions have been marked by decimal numbers 1-95 and in some cases subdivisions comprising of five figures are used.

		provide period division	within brackets.	
6.	Structure	Based on the scheme devised by Bacon and Harris	Based on the scheme DDC	Based on the traditional main classes listed under four zones. Zone 1-Generalia Class, Zone 2-Recently recognized main classes, Zone-3 Traditional main classes and Zone-4 Newly emerging methodologies
7.	Index	Relative Index-tried to locate the relative position of the different aspects of subject at one place in the index and is very exhaustive.	Alphabetical Index-is not so exhaustive and developed on the basis of chain procedure	Shortest index found in any classification scheme and is specific one which does not list composite subject.

3.11 Role of International Conferences towards Library Classification³⁴

The themes of discussions of the six international study conferences on Classification Research held during the period 1957-1997 are the positive indicators of the transitional requirements in the field of library classification. There have been a plethora of major developments and change in trends in library classification that have provided an international perspective as compared to the conventional branches of library science like cataloguing, indexing and abstracting. During the last four decades, a large number of conferences have taken place on library classification or knowledge organization by FID/CR and the International Society for Knowledge Organization (ISKO). These conferences became the rallying forum to highlight and project the challenges of scientific and technological developments. There has been a deluge of published macro and micro literature and their revolutionary impact on library classification. The Dorking Conference held in 1957 examined and evaluated the theories propagated by Dr. Ranganathan to surmount the problems resulting from the use of enumerative

classification. It was resolved that the most helpful form of classification scheme for information retrieval is the one which groups terms (isolate ideas) into well-defined categories and can be used independently to form compounds and within which the terms (isolate ideas) can be arranged in an hierarchies. The Conference, therefore, advocated in positive terms the message that the era of faceted classification has begun.

3.11.1 FID/CR Conferences

Since 1957, FID/CR has organized six International Study Conferences on Classification Research (ISCCR). The first ISCCR was held at Dorking, England, during May 13-17, 1957. Dr. Ranganathan, in his opening address, dwelt upon "Library Classification as a Discipline". The recommendations of this conference dealt with: Scope of classification; Schemes of classification; Need for research; Use of classification schemes; Differences between systems; Construction and application of schemes; Notation for such visually scanned systems as the card catalogue; Machine systems; Research projects; A general scheme for classification; Development of classification schemes; and Furtherance of Research.

The second ISCCR was held at Elsinore, Denmark, during September 14-18, 1964. Dr. Ranganathan delivered the presidential address entitled "Library Classification through a Century". The papers presented to this conference were grouped into five areas: General theory of classification; Research in mechanized classification; Selected and special schemes; Evaluation techniques; and Directions for future works.

The third ISCCR was held at Bombay during January 6-11; 1975. The recommendations of this conference focused on: General aspects of designing ordering systems for global information networks; Use of empirical methods and theoretical models for designing ordering systems for global information networks; Systems evaluation; Interdisciplinary contents; Education; Needs and problems of developing countries.

The fourth ISCCR was held at Augsburg, Germany, during June 28 - July 2, 1982. The theme of the conference was "Universal Classification, Subject Analysis and Ordering Systems".

The fifth ISCCR was held at Toronto, Canada during June 24-28, 1991. The theme of the conference was "Classification Research for Knowledge Representation and Organization". The papers presented to this; conference fall into three broad categories: General Principles and Policies; Structure and Logic Classification; and Empirical Investigation.

The sixth ISCCR was held at University College, London, on June 16-19, 1997 on the topic "Knowledge Organization for Information Retrieval". The University College, London, ASLIB, Classification Research Group (CRG) and International Society for Knowledge Organization (ISKO) sponsored this conference. The themes discussed in this conference were: Role of classification in information management; Classification research for retrieval of information published electronically; Automatic methods of classification; Researcher and the real world; Tools for classification and classification as a tool; and Data modeling.

3.11.2 International Society for Knowledge Organization (ISKO) Conferences

Established in the year 1989, the International Society for Knowledge Organization (ISKO) has organized four international conferences on knowledge organization. The summary of these conferences, deliberations is presented in the following paragraphs.

The first International ISKO Conference was held at Darmstadt, Technical University, Germany, on August 15-17, 1990. The theme of the conference was 'Tools for Knowledge Organization and Human Interface'. The papers presented to this conference covered the following areas: General issues pertaining to knowledge organization; Algorithmic text analysis; Terminology; Knowledge organization in universal systems;

Thesaurus issues; Online retrieval; Knowledge organization in special schemes; Retrieval from universal systems; and Retrieval technologies and indexing.

The second International ISKO Conference was held at Madras on August 26-28, 1992. The theme of the conference was 'Cognitive Paradigms in Knowledge Organization'. The papers presented at this conference were grouped into the following areas: Knowledge and knowledge organization; Knowledge seeking in libraries; Knowledge seeking in information retrieval; Knowledge seeking in problem solving; Taxonomic approach to knowledge organization; Analytico-Synthetic approaches to knowledge organization; Cognitive paradigms and their application; and Cognitive paradigms in knowledge bases.

The third International ISKO Conference was held at the Royal School of Librarianship, Copenhagen, Denmark, on June 21-24, 1994. The theme of the conference was 'Knowledge Organization and Quality Management'. The papers presented to this conference were grouped under: Quality in knowledge organization; Theory of knowledge organization; Future prospects for classification schemes and thesauri; Knowledge organization in specific domains; Concept representation in systems design; Linguistics in knowledge organization; Communication and knowledge organization; and New technologies and knowledge organization.

The fourth International ISKO Conference was held at James Madison Memorial Building, Library of Congress, Washington, on July 15-19, 1996. The main theme of the conference was 'Knowledge Organization and Change'. The sub-themes on which papers were presented were: Library of Congress Classification; Management of change in knowledge organization; Knowledge organization in online environment; Impact of technologies on bibliographic elements; Users' focus in knowledge organization; Interdisciplinary approaches to knowledge organization; Natural language processing; and Dewey decimal classification.

3.12 Role of Organizations towards Library Classification³⁵

During the past five decades, it is not only the individuals but several organizations, societies and research groups who have taken up the cause of library classification. They have carried on various research activities to provide a totally new direction to library classification and to transform it into an effective tool not only for shelf arrangement but also knowledge organization. The activities of these institutions are briefly presented in the following subsections.

3.12.1 Library Research Circle (LRC)

The Library Research Circle or LRC was founded in Delhi by S.R. Ranganathan in 1951. This circle used to meet on Sundays at Ranganathan's residence to pursue research on various aspects of classification, particularly relating to Colon Classification. Its members concentrated on fundamental categories, indicator digits, rounds and levels of manifestation, zone analysis and on requirements for depth classification. The work entitled "Depth Classification", published by the Indian Library Association, 1953, provides ample testimony to the contributions made by members of LRC. Its activities withered away from 1954.

3.12.2 FI/DCR

It was on the initiative of Dr. Ranganathan that FID formed a Committee on Classification Theory (FID/CA) in the year 1950. Later in 1961, FID/CA was renamed as the Committee on Classification Research (FID/CR). This Committee has been stimulating classification research. The activities of FID/CR are communicated through a serial publication entitled FID/CR Newsletter, published four times a year listing classification research projects in progress. FID/CR has so far organized six international conferences already referred. The present chairman of FID/CR is Dr. I. C. McIlwaine.

3.12.3 Documentation Research and Training Centre (DRTC)

DRTC was established in Bangalore in 1962 by S.R. Ranganathan. It actively promoted different levels of research in library classification. These are: 1. Development research to develop depth schedules; 2. Fundamental research to develop postulates and principles; and 3. Systematic testing of depth schedules developed by faculty and alumni of DRTC. It has been organizing annual seminars on thrust areas of Library Classification and Information Science, conducting short term courses and workshops. It is bringing out, in collaboration with Sarada Ranganathan Endowment for Library Science a quarterly journal "Library Science With Slant to Documentation and Information Studies" (1964-).

3.12.4 International Society for Knowledge Organisation (ISKO)

This society was founded at Frankfurt, Germany in 1989. Its founder president is Dr Ingetraut Dahlberg. The principal aim of this society is "to promote research, development and application of all methods for organization of knowledge in general and in particular fields, by integrating especially the conceptual approaches of classification research and artificial intelligence. The society stresses philosophical, psychological and systematic approaches for conceptual objects". The society provides for personal contact and opportunities to the worldwide community of colleagues who devote themselves to the creation, expansion, revision and application of tools for the organization of knowledge according to the conceptual point of view. The society has already organized four international ISKO conferences. The summary of these conferences' deliberations has been presented in section 15.6.2. The society is also bringing out a quarterly journal entitled "Knowledge Organization", formerly known as International Classification. This is devoted to concept theory, classification, indexing and knowledge representation.

3.12.5 Classification Research Group (CRG)

CRG is a group of working librarians and others interested in classification research in London. When Ranganathan's ideas of faceted classification began to make an

impression in the western world, the Royal Society's Scientific Information Conference was held in London in 1948, where classification, as a method of subject organization, was discussed as one of the themes. Dissatisfied by the prevailing methods of subject organization, a committee with J.D. Bernal as Secretary was set up to examine the existing systems and suggest possible improvements. No progress was however, made until 1951, when B.C. Vickery was invited to form a group to take over the work of the committee. This heralded the formation of CRG in 1952. The group consists of people who are keenly interested in classification research. A perusal of the reports ("Bulletins") produced by the CRG indicates that the Group has been actively involved in the creation of several classification schemes for such organizations. The theoretical work of the Group has involved the study of facet analysis, relational operators and the theory of Integrative Levels." The efforts of the group are directed in two directions: classification and data mining. The classification effort focuses on both methodological research and particularly novel, non-standard applications. The work in classification has significant overlap with other areas, including machine learning and pattern recognition, so that the publications appear in a wide literature. The data mining effort has become focussed primarily on the emergent areas of pattern discovery and detection and streaming data analysis.

CRG made a major contribution towards a new general classification scheme, which was expected to have quite different problems than the special schemes. Each specific subject, in addition to a few core subjects, has some fringe subjects also, which can be treated without any due seriousness in a special scheme where they are supposed to be less important to the subject experts than the core subjects. In a general scheme all subjects have equal weight-age and should be treated accordingly. It was thought that CRG should now turn its attention to the more difficult matter of a new general scheme.

3.13 Recent Developments in classification³⁶

1. Construction of Thesauri - Various Thesauri have been constructed with the help of classification schemes since these schemes function as the one of major sources for selection and getting most of the used terms in thesauri. Hence so many research projects have been established for the construction of thesauri.
2. Standard Switching Language - Due to the explosion of knowledge, the requirement of standard switching language was felt for the timely use of indexing terms and in indexing language and UDC was treated suitable for using this switching language, as it was at that time suitable for computerized retrieval and dissemination of information. FID is using UDC for constructing thesauri and terminology.
3. Automated Classification - By doing so many experiments in the field of automated classification process and system, the efforts have been made to develop the same. The use of automated classification in a specific database is becoming more helpful.
4. Computerized MARC Project - The information storage is being transformed into micro and machine readable forms. Hence there is a requirement to develop an advanced classification scheme, which can be useful in this age of information technology. Library of Congress (LC) and Dewey Decimal Classification (DDC) Schemes are being used in the MARC project.
5. UNISIST - UNISIST planned for a Universal Information System and Network, for which the need is to provide classification schemes in a new pattern because the present classification schemes do not have the efficiency of organizing the computerized stored information.

3.13.1 Vocabulary Control and Thesaurus Construction

The basic principles of thesaurus construction are of relevance in a study of subject trees, taxonomies and ontologies. Rowley defined thesaurus as ‘a compilation of words and phrases showing synonyms, hierarchical and other relationships and dependencies, the

function of which is to provide a standardized vocabulary for information storage and retrieval systems'. The primary function of a thesaurus is to show semantic relationships between terms: relationships based on their meaning, i.e. what a classification scheme does, but with terms arranged alphabetically. The thesaurus is also an agent of vocabulary control showing terms which may or may not be used in an index. Thesaurus construction bears many similarities to creating a classification scheme.

3.13.2 Subject Trees

Subject trees are familiar to anyone who is using web for information searching. Web directories utilize a subject tree structure that provides a browsing environment for searchers. The subject trees provided by web directories like Open Directory (<http://www.dmoz.org>) provide the same information structure as traditional enumerative classification schemes, displaying subjects in a hierarchy and making explicit their relationships to one another.

3.13.3 Web Directories

Classification schemes provide a subject arrangement of books on shelves and subject grouping helps browsers because they can identify which part of the library to browse in. digital information retrieval systems can also organize for browsing. Web directories provide a browsing environment: menus are used to navigate hierarchies, guiding the user through a series of choices to increasingly specific information. A subject tree provides a structured and organized hierarchy of named categories that can be browsed for information on particular subjects. Under each category or subcategory, links are provided to further categories or web pages. Web pages are assigned to a category by their authors or by subject tree administrators.

3.13.4 Taxonomies

The word 'taxonomy' has been with us for a very long time and it has most commonly been used in the context of classifying organisms. The term has more recently been

borrowed by computer science and knowledge management to describe the organization of web-based information and documentation. It provides a means for building subject trees, showing the relationship between subjects in a hierarchy that can be browsed: the user can follow the links down the hierarchy to more specific subjects or follow links up the hierarchy to broader subjects.

3.13.5 Ontologies

A dictionary meaning of ontology is the branch of metaphysics that deals with the nature and essence of things or of existence. Ontology is a document or file that formally defines the relations among terms. The power of the ontology can be increased with the inclusion of equivalence relationships.

3.13.6 Social Classification or Folksonomy

Given the complexities and resource-intensiveness of bibliographic classification systems, some alternative approaches to classification of electronic resources have evolved over the past few years. This unstructured or freely structured approach to classification with users assigning their own labels is variably referred to as 'folksonomy', 'ethnofolksonomy', 'distributed classification', 'social classification', 'open tagging', 'free tagging' and 'faceted hierarchy'. Folksonomy is defined as internet-based information retrieval methodology consisting of collaboratively generated, open-ended labels that categorize content such as web pages, online photographs, and web links. It allows user to easily add web pages of their choice to their personal collection of links, to categorize those sites with keywords, and to share the collection not only among their own browsers and machines, but also with others.

3.14 Internet and Library Classification Schemes

Internet, the largest storehouse of information, has around 100 million pages of information. To find the required information contained on the Internet is a complex task. Attempts have been made to apply library classification schemes for retrieval of

information contained on networks. The advantages³⁷ of adopting library classification schemes are:

1. Enhanced browsing, subject search facilities and navigation;
2. Possibility of offering multilingual access;
3. Interoperability with other services;
4. Facility for partitioning of large databases.
5. More recall and precision through broadening and narrowing search terms
6. Contextual representation of search terms
7. Use of a common classification scheme could make search easier across databases.
8. Users may find it easier to browse, because of the familiarity with the classification scheme (which they might have been using in libraries).

Moreover,- if the Internet service provider uses an existing and popular classification scheme, it has better chances of being up-to-date as it is revised at regular intervals and is popular with users. The library has increasing numbers of electronic resources that need to be classified. There is currently much interest in the concept of information architecture which incorporates key elements of library technical processes: cataloguing (metadata), classification (taxonomy) and indexing and thesaurus construction (ontology). The latter two concepts are of relevance, where principles of library classification and classification schemes are examined and extrapolated into digital information environment with the examination of subject trees, taxonomies and ontologies.

Although classification schemes were mainly designed for organizing bibliographic items on the library's shelves, many researchers have also used library classification schemes for organizing information resources on the web. Examples of such applications include CyberDewey and so on. Many heavily used digital libraries and subject gateways also use bibliographic classification schemes to organize internet information resources, such as BUBL (uses DDC) and ACM digital library (uses ACM classification).

3.14.1 Internet Sites using Library Classification System

A list of Internet sites that uses library classification systems or subject headings can be found in:

ADAM–Art, Design, Architecture & Media Information Gateway

[\(http://www.adam.ac.uk/\)](http://www.adam.ac.uk/)³⁸

ADAM is a service being developed to help you locate useful, quality-assured information on the Internet in the following subject areas:

1. Fine Art, including painting, prints and drawings, sculpture and other contemporary media including those using technology
2. Design, including industrial, product, fashion, graphic, packaging and interior design
3. Architecture, including town planning and landscape design, but excluding building construction
4. Applied Arts, including textiles, ceramics, glass, metals, jewellery and furniture
5. Media, including film, television, broadcasting, photography and animation
6. Theory; relevant historical, philosophical and contextual studies
7. Museum studies and conservation
8. Professional Practice related to any of the above

ADAM helps you find the relevant information by providing a searchable on-line catalogue describing Internet resources such as web sites or electronic mailing lists, in much the same way as a library catalogue describes bibliographic resources such as books and journals. The records in the ADAM catalogue are created by a team of professional librarians, who evaluate the quality of each resource against our selection guidelines and then use the traditional tools and skills of librarianship (such as cataloguing rules for keyword indexing, classification and controlled terminology) to create a detailed description for any resources that are relevant to ADAM's subject scope, accurate, authoritative, reasonably current and contain a significant amount of unique information.

Biz/ed (www.bized.ac.uk)³⁹

Biz/ed is a subject gateway for business education, which offers an online catalogue of good quality Internet resources (Like SOSIG Biz/ed also uses the ROADS software for its gateway). Since its inception in 1996, this catalogue has been using an abridged version of DDC to classify resources, and to create browsable subject categories. It has used the business section of DDC to pick out a selection of numbers and classes that could be used to form the browsable sections on the site.

Blue Web'n Content Categories⁴⁰

(<http://www.kn.pacbell.com/wired/bluewebn/categories.html>)

This service gives the facility to browse by subject areas where each subject area and its sub-divisions are marked by their respective DDC notations. DDC numbers are given as mere references and the site does not make use of DDC for organizing the resources.

BUBL (www.bubl.ac.uk)⁴¹

BUBL uses DDC as the primary organization structure for its catalogue of internet resources. This figure shows the main catalogue of BUBL resources that are organized according to the Dewey main Classes; the user can click on any class to reach the corresponding subcategories that are again arranged according to Dewey numbers.

<u>000 Generalities</u> Includes: computing, Internet, libraries, information science	<u>500 Science and mathematics</u> Includes: physics, chemistry, earth sciences, biology, zoology
<u>100 Philosophy and psychology</u> Includes: ethics, paranormal phenomena	<u>600 Technology</u> Includes: medicine, engineering, agriculture, management
<u>200 Religion</u> Includes: bibles, religions of the world	<u>700 The arts</u> Includes: art, planning, architecture, music, sport
<u>300 Social sciences</u> Includes: sociology, politics, economics, law, education	<u>800 Literature and rhetoric</u> Includes: literature of specific languages
<u>400 Language</u> Includes: linguistics, language learning, specific languages	<u>900 Geography and history</u> Includes: travel, genealogy, archaeology

Fig.3.8: BUBL Link Catalogue using Dewey Class Numbers for Internet Resources

CyberStacks (www.public.iastate.edu/-CYBERSTACKS/)⁴²

CyberStacks(sm) is a centralized integrated and unified collection of selected digital resources categorized using the Library of Congress classification scheme. Resources are organized under one or more relevant Library of Congress class numbers and an associated publication format and subject description. The majority of resources incorporated within its collection are monographic or serial works, files, databases or search services. All of the selected resources in CyberStacks(sm) are full-text, hypertext, or hypermedia, and of a research or scholarly nature. Using an abridged version of LC, CyberStacks(sm) allows users to browse through virtual library stacks containing monographic or serial works, files and databases of search services to identify potentially relevant information resources. Resources are categorized first within a broad classification, then within narrower subclasses and resources are listed under a specific class. Although CyberStacks (sm) is the only site using LC and was a novel application in that respect, it had not been updated for quite some time.






G	<u>Geography, Anthropology and Recreation</u>	
H	<u>Social Sciences</u>	
J	<u>Political Science</u>	
K	<u>Law</u>	
Q	<u>Science</u>	
R	<u>Medicine</u>	
S	<u>Agriculture</u>	
T	<u>Technology</u>	
U	<u>Military Science</u>	
V	<u>Naval Science</u>	

Fig. 3.9: Main Menu of CyberStacks(sm)

CyberDewey (<http://library.tedankara.k12.tr/dewey/>)⁴³

CyberDewey is the catalogue of World Wide Web by David A. Mundie created in 1995.

Canadian Information by Subject⁴⁴

(<http://www.collectionscanada.gc.ca/caninfo/ecaninfo.htm>)

Canadian Information By Subject is an information service developed by the Library and Archives Canada to provide links to information about Canada from Internet resources around the world. The subject arrangement is in the form of a "Subject Tree", based on the structure of the Dewey Decimal Classification system. This service is updated regularly and is constantly developing and expanding. Be sure to check back often to see the latest additions.

Subject Tree - Subject Order	
0	<u>Computer science, information and general works</u>
1	<u>Philosophy, parapsychology and occultism, psychology</u>
2	<u>Religion</u>
3	<u>Social sciences</u>
4	<u>Language</u>
5	<u>Natural sciences and mathematics</u>
6	<u>Technology (Applied sciences)</u>
7	<u>Arts. Fine and decorative arts</u>
8	<u>Literature (Belles-lettres) and rhetoric</u>
9	<u>History, geography, and auxiliary disciplines</u>

Fig. 3.10: Canadian Information by Subject

NetFirst (<http://www.oclc.org/oclc/netfirst>)⁴⁵

NetFirst is an authoritative abstracted and indexed database from OCLC. It has used DDC to organize a browsing structure since October 1996. DDC notations had been present in their links from the start of the service, but have only recently been made available for browsing.

PICK: Quality Internet Resources in Library and Information Science⁴⁶

PICK: Quality Internet Resources in Library and Information Science by University of Wales Aberystwyth, Thomas Parry Library was using DDC based categories for browsing. However the service is no longer available.

WEBrary (<http://www.nslsilus.org/mgkhome/orrs/webrary.html>)⁴⁷

(Online Ready Reference System) by Morton Grove Public Library has organized their Web links according to DDC. Each category is identified by respective DDC numbers.

Specialized Classification Schemes

Apart from the traditional classification schemes, there are a number of special classification scheme which have been devised for organizing information resources in special subjects or disciplines. The main reason is that the traditional schemes have very

little scope to provide sufficient details of any specific areas, so special classification schemes are becoming popular. It can deal with different aspects and vocabularies of a subject and therefore can meet special user's requirements by arranging the order. However, some drawbacks such as irregular revision, limited documentation regarding support, training and so on may restrict the use of special classification schemes. ACM Classification (www.acm.org/class/1998/ccs98.html) is one of the special classification schemes; these are its main classes:

A	General Literature
B	Hardware
C	Computer Systems Organization
D	Software
E	Data
F	Theory of Computing
G	Mathematics of Computing
H	Information Systems
I	Computing Methodologies
J	Computing Applications
K	Computing Milieus

Fig. 3.11: Main Classes of ACM Classification

The ACM digital library uses the ACM classification scheme to help users' access information resources in the digital library. After conducting a normal search using the search interface, when users select a specific retrieved item, they can see how the chosen search term appears in the ACM classification, and this may help them modify the query by selecting the appropriate category.⁴⁸

3.22 Conclusion

The discipline library classification is conditioned by the constant multifaceted, multidimensional and infinite development of the macro and micro knowledge and users' needs. Change is the law of nature and whatever does not change with the changing needs and demands become static and redundant like a piece of artifact in a museum. Accordingly, it has been the attempt of library and information scientists, associations and institutions to work in the direction of making library classification; a living

discipline, a discipline which can cope with the ever-growing and infinite demands and challenges both of knowledge and users of libraries and information centers.

The library classification is the basic tool for organizing and exploring the documents stored in a library. In modern times they are the navigation tools for locating and retrieving documents in more precisely and relevantly. In the era of ICT the electronic versions of the DDC and UDC make it possible to realize the potential of library classification to improve subject retrieval; however, much of the renewed interest in classification as an organizing and retrieval device for information resources has been sparked by the growth in usage of the Internet and World Wide Web (WWW).

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